



A CONSPECTUS
OF THE TACHINIDAE (DIPTERA)
OF AUSTRALIA, INCLUDING KEYS
TO THE SUPRASPECIFIC TAXA
AND TAXONOMIC AND HOST
CATALOGUES

R. W. CROSSKEY

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BY
ROGER WARD CROSSKEY

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SYNOPSIS

A detailed conspectus is provided of the Australian Tachinidae, a group that has hitherto lacked any taxonomic synthesis. Original keys are given to the family-group taxa and to the genera and subgenera so far recognized in the fauna; many undescribed forms are known and the preliminary nature of the keys is therefore emphasized. Preliminary characterizations are given for family-group taxa to aid towards formalized diagnoses on a world basis. A complete systematic catalogue is given of all described Australian Tachinidae, based upon an examination of almost all extant primary types, and the known host relations are shown by up-to-date host-parasite and parasite-host lists. Nomenclatural changes established in the taxonomic catalogue are summarized and include 14 new genus-group synonyms, 26 new species-group synonyms, 83 new generic combinations, and two new names for preoccupied homonyms; 12 lectotypes are newly designated. An annotated glossary is included of the terms used in the taxonomy of adult Tachinidae, and figures are given to illustrate the glossary and the keys.

PREAMBLE

AUSTRALIA possesses a rich and varied tachinid fauna, most of which is still undescribed. Some 420 named species are recognized at present, but it is obvious from an examination of unidentified material in the collections at Canberra and London that this number represents only a small proportion of the species that will ultimately be recognized: it is probable that when fully worked out the Australian Tachinidae will muster some 1500–2000 species.

This fauna, though not enormous by the standards of some insect families, presents considerable taxonomic difficulties (Colless & McAlpine, 1970) and it will certainly be many years before any comprehensive monographic treatment can be prepared and the multifarious new genera and species adequately described and named. In the meantime the practical identification of Australian Tachinidae is bound to present a problem for which the services of a specialist in the group are likely to be required, if only to distinguish rapidly the known from the unknown elements in the fauna. At present there is no full-time Australian specialist working on the group, despite the fact that there is a very real need for taxonomic studies to be undertaken on the Australian tachinids because of their role as parasites of other insects and their potential importance as biological control agents. Australia suffers from many serious insect pests of economic significance (such as the chafer-grubs of sugar-cane and the *Eucalyptus* defoliators), all of which are attacked by tachinid parasites that are assumed to play an important part in naturally regulating the populations of their hosts; few attempts have yet been made, however, to exploit the Tachinidae of Australia for biological control purposes.

It will be an essential prerequisite for future investigations into the value of Australian tachinids as biological control agents that the flies themselves can be rapidly and accurately identified. At the moment only a small fraction of the fauna can be so named, since the great bulk of species remain unstudied and undescribed. An enormous untouched taxonomic field, with a direct bearing on the practical control of insect pests, awaits the Australian student willing to take up the systematics of the Australasian Tachinidae as a whole (attention cannot

be paid solely to continental Australia as much of the fauna is held in common with that of New Guinea and the Pacific islands and in some instances with areas still further afield).

Up to now Australian dipterists have been deterred from working on their local tachinid fauna by the practical difficulties of knowing where to start in the absence of any comprehensive revisionary works and scarcely any keys, and by the fact that so many of the type-specimens are housed in collections outside Australia. For some time there has been a need for a synthesis of existing taxonomic knowledge which will provide a foundation upon which future work can be developed, and the object of the work here presented has been to provide a synthesis of this kind. The work has been based on a study of the Australian Tachinidae carried out at intervals over the last ten years, and its aims are to provide: (a) a classification of described forms and a classificatory framework into which new forms can be fitted, with whatever modifications may be necessary, as they are described; (b) preliminary characterizations of the subfamilies and tribes recognized in the fauna and keys to family-group taxa; (c) identification keys to the described genera and subgenera; (d) a taxonomic catalogue, based upon an examination of all available primary types and geographically annotated; (e) a catalogue of known hosts; and (f) an illustrated glossary of the terms used in the taxonomy of adult Tachinidae that will aid the would-be student in acquiring a knowledge of the group. It has not been practical at this stage, when many genera remain in need of complete revision, to provide keys to species and descriptions of species, and it should be noted that some of the species names listed in the catalogue may prove to be synonyms of other names when their genera are studied in detail.

Finally in this preamble it might be useful to comment briefly on the apparent affinities and zoogeographical relationships of the Australian Tachinidae. In the main the fauna consists of endemic genera and species occurring principally in the eastern and southern parts of the Australian continent and in Tasmania, but in northern Queensland and in the Northern Territory this essentially Australian fauna is supplemented by many Oriental genera and species that occur widely throughout South-East Asia and spread eastwards into Melanesia and northern Australia. There is thus a large shared element in the fauna between New Guinea and Queensland of forms that probably reached Australia by immigration from the north and west. In addition to this, however, there has perhaps been a contrary movement of characteristically Australian forms northwards into New Guinea (for recent collecting has now shown the presence of such typically 'Australian' genera as *Amphibolia*, *Chaetophthalmus* and *Tritaxys* in the central New Guinea highlands), unless the common elements between upland New Guinea and upland New South Wales are separated remnants from a formerly widespread distribution. A few species occurring in Australia are widespread throughout the Old World, and it seems likely that critical future work will show the presence in Australia of species having a circum-Indian Ocean distribution from eastern Africa through peninsular India and on to Western Australia or Queensland: some tachinid parasites, such as *Carcelia* species attacking *Heliothis*

cotton bollworms, masquerade under different names in different zoogeographical regions (just as their hosts often do) when almost certainly only a single species is involved. Between Australia and New Zealand there is almost no relationship at all in the tachinid fauna, that of New Zealand being a baffling and peculiar fauna very different from that of the rest of the Old World; the only notable point of resemblance between the Australian and New Zealand faunas is in the Phasiini, where the New Zealand 'genus' *Campbellia* suggests derivation from the Australian part of the *Alophora* (*Mormonomyia*) complex. Little can be said about any possible relationship between the Australian Tachinidae and those of South America beyond commenting that there is some resemblance in facies between forms in Tasmania (and nearby parts of the Australian mainland) and some forms in the southern Neotropical fauna; the significance of this resemblance is not clear.

All the main subfamilies and tribes of Tachinidae are represented in Australia, but the area is remarkable for the rich development of the Proseninae (=Dexiinae) and in particular of the Rutiliini (Crosskey, 1973). The abundance of forms in this tribe appears to be closely correlated with the richness in Australia of the chafer fauna (Scarabaeidae : Melolonthinae), which provides the hosts for these tachinids.

PART I—KEYS TO THE SUPRASPECIFIC TAXA OF AUSTRALIAN TACHINIDAE

INTRODUCTION

It is certain that the several hundred species of Tachinidae known to occur in Australia represent only a small proportion of the fauna that will ultimately be discovered and (presumably) named. It is therefore premature, in a sense, to attempt to provide keys to the supraspecific taxa, especially when experience shows that even with a well-known fauna like the Tachinidae of Britain it is difficult to construct really satisfactory keys that anyone but a specialist can use reliably. Yet in attempting to acquire a knowledge of a large and complex insect fauna like the Tachinidae of Australia the potential student is in need of some keys that at least begin to organize the mass of data available and to show how the many described genera can be differentiated, and how the higher taxa to which they belong can best be recognized.

Scarcely any keys to the Australian fauna have up to now been available. Malloch (various papers) published small piecemeal keys to place some of his newly described taxa among their relatives, and one or two longer keys for the recognition of artificial groups of genera, but these have been of very limited use and are now outmoded by changes in generic concepts that have taken place during the past thirty years or so. Apart from these, the only keys published to any Australian supraspecific taxa have been restricted to the Rutiliini (Paramonov, 1968; Crosskey, 1973).

None of these pre-existing keys is of any use in providing the would-be student of the Australian fauna with an over-all system of keys that will provide a means of identifying the many tribes and genera to be found on the Australian continent. The object of these keys here presented is to provide just such a system, so that

the worker interested in taking up this group has some means at hand for beginning on a study of the Tachinidae without necessarily having immediate access to a large museum collection: to aid the student as much as possible a detailed glossary is given of all the main terms used in the keys.

The Tachinidae is a taxonomically very difficult family, as Colless & McAlpine (1970) have emphasized in their account of the Australian Diptera, and it is notoriously difficult to make keys that are free from all possibility of error when identifying specimens. Specialists on the family frequently find difficulty in using keys, and not infrequently make errors of identification in spite of their knowledge of the family; these points are emphasized, so that the beginner on the group shall not feel too discouraged when keys appear to fail (as they will occasionally, since much of the fauna remains unknown) or when the specimen that ran out so convincingly to a certain name proves to be something quite different.

MATERIAL AND METHODS

The keys and diagnostic matter are mainly based on a study of material in the British Museum (Natural History), London, together with a study of types (especially those of the type-species of Australian genera) from the collections in Berlin, Canberra, Eberswalde, Ottawa, Paris, Vienna and Washington. The BMNH collection is the largest and most representative of world Tachinidae, and, except for the Australian National Insect Collection, is richer in material from Australia than other collections.

With few exceptions the early stages of Australian Tachinidae remain completely unknown and the keys are, perforce, based only on adult characters. For describing these the following conventions and abbreviations are used.

In describing the positions of leg setae the convention is followed of imagining the leg to be extended at a right-angle to the longitudinal axis of the fly, when:

<i>a</i>	anterior	<i>p</i>	posterior
<i>ad</i>	anterodorsal	<i>pd</i>	posterodorsal
<i>av</i>	anteroventral	<i>pv</i>	posteroventral
<i>d</i>	dorsal	<i>v</i>	ventral

A tibial seta indicated by any of these letters is on the shaft of the tibia and not at its end unless otherwise specified.

The abbreviations used for thoracic setae are:

<i>acr</i>	acrostichal	<i>pra</i>	pre-alar
<i>dc</i>	dorsocentral	<i>prst acr</i>	presutural acrostichal
<i>ia</i>	intra-alar	<i>prst dc</i>	presutural dorsocentral
<i>ph</i>	posthumeral	<i>prst ia</i>	presutural intra-alar
<i>post acr</i>	postsutural acrostichal	<i>sa</i>	supra-alar
<i>post dc</i>	postsutural dorsocentral	<i>stpl</i>	sternopleural
<i>post ia</i>	postsutural intra-alar		

Abdominal tergites are indicated by the letter T followed by the appropriate number; the composite first apparent tergite is $Tr + 2$, the usual last visible tergite T5. Abdominal sternites are indicated by the letters St suffixed as for tergites (only the male St5 generally requires citation).

Parts of the male hypopygium are infrequently cited in the keys, but the terminology used by Colless & McAlpine (1970) is used throughout the paper whenever genital features are mentioned.

All keys are regularly dichotomous. The keys include names of a few genera that are not yet positively known from Australia but seem likely to be found there: in such cases the names are printed in non-bold type. Where a generic name is included in square brackets in the keys it indicates that the tribal position of the genus concerned is uncertain, but that the genus is included in a different tribe in the formal classification adopted from the one to which the key relates.

Figures have all been drawn personally and attempt to show only the essentials required for identification (needless shading and vestiture have been omitted). An attempt has been made to illustrate basic patterns of chaetotaxy (see Text-figs 4, 7 & 54-63) on the thorax by omitting the bristles themselves and indicating their distribution just by the 'pore-patterns' of their insertions. Such a method of illustrating chaetotaxy seems hardly to have been used at all in tachinid taxonomy but provides a useful visual aid for recollecting the most fundamental and frequently recurring patterns. It must be emphasized that the circles indicating the bristle pores are exaggerated in size relative to the sclerites, but that different sized circles are used to show (approximately) the relative sizes of the bristles to each other. Broken lines between circles indicate the serially arranged setae that have the same composite terminology.

AN ANNOTATED GLOSSARY OF CHARACTERS AND TERMS USED IN THE KEYS

The glossary here given summarizes the terminology used in the keys, so as to make these as comprehensible as possible to the non-specialist (including in particular the Australian student who might wish to take up tachinid taxonomy). Hardly any of the recent works – and very few old works – contain any glossary of the terms habitually used by taxonomists working on the Tachinidae, and the glossary here presented ought (it is hoped) to be of benefit to my specialist colleagues in so far as it attempts to define the external adult characters most often used in supraspecific taxonomy and to correlate the various synonymic terms most commonly used by different authors.

The terminology adopted is that which appears to be the most universally accepted, and most readily comprehended, by specialists. It is, however, essentially a taxonomist's vocabulary, and some of the terms are at variance with those favoured by the morphologist. This point is specially germane when dealing with the Australian fauna, as Colless & McAlpine (1970) in their work on the Australian Diptera have adopted a strongly morphological line for their structural terminology, and there are therefore some discrepancies between the taxonomic terminology and that of Colless & McAlpine; in particular this affects the names

of parts of the thorax and of certain wing veins. Some of the terminology used by Colless & McAlpine is helpful for the taxonomist, especially their terms *pleurotergite* and *mediotergite* for parts of the thorax that have not had satisfactory names in the taxonomic literature, and these terms are here adopted (as *pleurotergite*, for example, is a much handier name than the usual *supra-spiracular convexity* of the taxonomist); on the other hand it is disadvantageous in taxonomy to have to speak of the *posterior pronota* and in this case I prefer the time-honoured taxonomic term *humeral calli*. In regard to the nomenclature of wing veins I continue to follow the standard work on Tachinidae by Mesnil (1944) in preference to the venational notation found in most of the more generalized works on Diptera (including that of Colless & McAlpine); the main difference between these systems that is of practical importance concerns the so-called fifth vein which Mesnil (here followed) calls Cu_1 and which is known as M_{3+4} in other works (e.g. Colless & McAlpine, 1970).

The existence of many alternative names for different structures has made it necessary to record the more important or frequent alternatives, and this has been done in the glossary by entering the alternative name(s) when needed (italicized and in parentheses) at the end of each definition. The alternatives should be helpful in correlating the present work with that of other authors (for example, by showing that the structures here termed *parafrontals* are those often known as *orbits*). In some instances the German equivalents have been given so that the English terminology used in keys can be readily associated with the German terminology used in Mesnil's very important work on Tachinidae in Lindner's *Die Fliegen der Palaearktischen Region* 64g (which contains keys of great value on a world basis as well as for the local Palaearctic fauna).

Many of the glossary definitions are accompanied by separately paragraphed annotations that are designed to show, very briefly, the taxonomic value of the characters for which the terms stand. In these notes examples are often cited of particular genera or higher taxa in which a certain character condition occurs: the examples are drawn from the Australian tachinid fauna, but most of them are relevant to other zoogeographical regions as well. *The annotations apply only to Tachinidae and must not be read as applicable to other Diptera.*

The accompanying Text-figures 1-23 have been specially prepared to illustrate the characters mentioned in the keys and as an adjunct to the glossary definitions.

abdominal T1 + 2. The apparent first segment of the abdomen, formed compositely of fused first and second tergites (loosely, *first segment*) (Text-figs 91 & 94).

acrostichal setae. The innermost two longitudinal rows of setae on the mesonotum (Text-fig. 4).

These may be absent or reduced (e.g. in some Phasiini, Minthoini) or represented by only the prescutellar pair.

antennal axis. An imagined horizontal line through the head profile at the level of the antennal insertions (Text-fig. 14).

The height of the axis relative to the eye centre and the head length at this axis in relation to head length at the epistomal axis can be significant in describing head form.

apical scutellar setae. The hindmost pair of marginal setae on the scutellum (except when undeveloped) (Text-figs 5 & 6).

Orientation of these setae (whether horizontal or upright, crossing or diverging) can be taxonomically important. If the apical setae are unrepresented then other marginal setae are the hindmost ones in a literal sense.

appendiculate. Provided with an M_2 appendix (q.v.) (said of vein M).

appendix. A spur-like vein of varied length that continues almost directly towards the wing margin from the bend of vein M (designated M_2) (Text-fig. 10).

Normally present only when vein M is abruptly angled and sometimes represented only by a weak vestige or even a mere fold in the wing membrane.

arista. The setiform or style-like part of the antenna arising externally from the base of the third antennal segment (German: *Fühlerborste*) (Text-fig. 1).

Present in all Tachinidae and providing useful taxonomic features in hair length, extent of thickening, and elongation of the two basal segments. Typically it is micropubescent (with very inconspicuous hairing that is shorter than its own diameter) or pubescent (with more conspicuous longer hair that does not or only slightly exceeds its own diameter), but may be plumose (with long hairs that greatly exceed in length its own diameter and give the arista an obvious bushiness). Micropubescent or pubescent in all Phasiinae and nearly all Goniinae, often plumose in Proseninae and Tachininae (especially Minthoini).

barette. A small subrectangular area on the pleural region of the thorax differentiated between the pteropleuron and the hypopleuron (meropleuron) (Text-fig. 7).

Of minor taxonomic importance in the extent of its hairing. Usually a few hairs only on anterior part but commonly bare, less often fully haired along its length (e.g. in most Rutiliini, *Winthemia*).

basal node of R_{4+5} . The slightly or strongly swollen basal part of wing vein R_{4+5} near its bifurcation from vein R_{2+3} (Text-fig. 10).

Usually bearing one more small hairs or setulae on the upper surface (usually also on lower surface), sometimes totally bare (e.g. in many Phasiini, a few Blondeliini and Leskiini). Presence of only one very strong setula (e.g. in *Palearista* and allied Sturmiini, many Neaerini and Acemyini) in contrast to several small hairs is often taxonomically important.

basal scutellar setae. The pair of marginal setae nearest to the scutellar base (except when, very rarely, undeveloped) (Text-figs 5 & 6).

The most constantly present pair of scutellar marginal setae throughout the Tachinidae, unrepresented in a very few forms (e.g. some Minthoini).

basicosta. The small sclerite anteriorly at the wing base between the tegula and the base of the costa (*subepaulet*).

The colour (whether clear yellow or orange instead of blackish brown) of this sclerite is of minor taxonomic value in different parts of the family.

bend of vein M . The forward curvature or angulation of the median vein (M) where the bifurcation of M_1 and M_2 occurs, or if there is no bifurcation then the part of M where a forward change in its general direction occurs before it attains the wing margin (*cubitus*) (Text-figs 10 & 11).

The nature of the bend can be of great taxonomic importance (e.g. in differentiating the Blondeliini with an open gently curving bend from the Exoristini with a sharply angulate bend). A few Tachinidae lack the apical part of the vein (i.e. M_1) and there is therefore no bend, and some very rare aberrant forms have only a very slight forward inclination of M .

cell R_5 . The wing cell distal to cross-vein $r-m$ and enclosed by vein R_{4+5} anteriorly and veins M and M_1 posteriorly (*apical cell*) (Text-figs 10 & 11).

An important taxonomic character is provided by this cell and its associated venation according to whether it is 'open' or 'closed'. If the veins R_{4+5} and M_1 reach the wing margin separately from each other then cell R_5 reaches to the wing edge (Text-fig. 10) and is *open*; but when veins R_{4+5} and M_1 coalesce and form a short common stalk ('petiole') before reaching the wing margin the cell is isolated from the edge of the wing and is *closed* (Text-fig. 11). In the latter case the cell is described as 'petiolate' (prefixed 'long-' or 'short-' if desirable). Intermediate forms occur in which the cell is closed just at the wing margin.

The cell is open in the vast majority of Goniinae, Tachininae and Proseninae, but is commonly closed and long-petiolate in Phasiinae (e.g. *Alophora*, *Cylindromyia*, *Leucostoma*, *Euthera*).

cerci. The inner median pair of articulated processes attached to the epandrium of the male hypopygium (*mesolobes*, *inner forceps*, *anal forceps*) (Text-fig. 21).

Conformation and degree of fusion of the cerci have some taxonomic importance, but relatively little at supraspecific level.

costa. The strong vein forming the fore margin of the wing.

costal sector. A segment of the costal length between any two successive veins that end at the costa.

costal spine. A short strong seta on the costa at the apex of vein Sc , inserted immediately before the costal 'break'.

Usually undeveloped or very inconspicuous, if strong then normally not exceeding $r-m$ in length. Taxonomic value mainly at specific level.

cross-vein $m-cu$. The most distal wing vein connecting veins M and Cu_1 (*posterior cross-vein*, *hind cross-vein*, *m-m*, M_3) (Text-figs 10 & 11).

The position at which $m-cu$ joins M (whether mid-way between $r-m$ and the bend or nearer to the latter than the former) and the obliqueness of the vein have some taxonomic importance (e.g. in Voriini the cross-vein is exceptionally oblique in relation to the long veins and the wing in this tribe has a distinctive appearance on this account).

cross-vein $r-m$. The very short length of vein connecting veins R_{4+5} and M_1 and closing cell R_5 at its base (*anterior cross-vein*, R_6) (Text-fig. 10).

In itself of no taxonomic use but a reference point for determining length proportions on the long veins.

discal setae. Setae standing medially or submedially on a specified surface (e.g. scutellum or abdominal tergites).

Most often used with reference to strong erect setae standing centrally on one or more of the abdominal tergites (the *MD* of Townsend).

distiphallus. The apical part of the aedeagus of the male genitalia (*phallus*, *aedeagus*, *preputium*) (Text-figs 22 & 23).

Of considerable taxonomic importance at various levels because of its diversity of form. Sometimes bizarrely developed in whip-like or coiled form.

divaricate. Directed outwards from one another.

Used in particular of the ocellar setae when these curve neither forwards (proclinate) nor backwards (reclinate) but curve outwards from each other towards the eyes (e.g. in *Paragonia*).

dorsocentral setae. The two longitudinal rows of setae on the mesonotum outside of the acrostichal setae (*presutural* + *postsutural* setae of Townsend) (Text-fig. 4).

Typically these are the strongest and most stable of the mesonotal setae (excluding the presutural seta and the first supra-alar), but are weak or variable in a few groups (notably Phasiini and Rutiliini). The number of dorsocentral setae forming the presutural and postsutural complement is of great taxonomic importance, particularly in the Goniinae. Many genera and tribes are completely constant in their *dc* complement (e.g. all Sturmiini have 3 + 4 *dc* setae).

epandrium. The large curved plate of the male hypopygium that bears the cerci and surstyli and is morphologically the ninth tergite (*TGIX*) (Text-fig. 23).

Apparently well developed in all Tachinidae but of limited taxonomic use except for slight modifications in its vestiture.

epistomal axis. An imagined horizontal line through the head profile at the level of the epistomal margin (*oral margin axis*) (Text-fig. 14).

Head length at the epistomal axis in relation to length elsewhere (e.g. at the antennal axis) can be significant in describing head form.

epistomal margin. The anteroventral edge of the epistome (*oral margin*).

epistome. The lower anterior part of the head below the face and between the vibrissae (*epistoma*) (Text-figs 1, 2 & 12).

The development of the epistome is taxonomically important. Often there is no epistome clearly differentiated from the face (e.g. Minthoini, Nemoraeini), but in many forms there is a strongly developed epistome which curves forwards from face and is easily visible in front of the vibrissal insertions when viewed in profile (e.g. in many *Alophora*, most Rutiliini, *Chaetophthalmus*). In the Tachininae the presence of a prominently projecting epistome (visible in profile) or a flat epistome (invisible in profile) provides a very important key character separating groups of tribes. When the epistome is prominent its margin is usually well below the level of the vibrissal insertions, and when exceptionally pointed and projecting is usually referred to as subnasute.

erect. Standing upright in relation to the surface (said of hair or setae to contrast their orientation with others that lie down) (cf. recumbent).

excavate. With a depression (said of abdominal *T1* + 2).

The extent of the median dorsal depression of abdominal *T1* + 2 is of great

taxonomic importance at several levels in different parts of the family. Often the depression extends backwards to reach the end of the segment, in which case $T_1 + 2$ is described as 'excavate to its hind margin', but in many forms the depression clearly falls short of the hind margin or there is virtually no depression at all (e.g. many Phasiinae, Doleschallini). When $T_1 + 2$ is excavate to its hind margin this condition often holds true of all the members of a tribe (e.g. all Rutiliini, all Sturmiini); in other tribes (e.g. Blondeliini) the tergite may be excavate to its hind margin in some genera but not others. In many Prosenini the excavation is rather deep and narrow and the sides of $T_1 + 2$ are rather strongly humped.

face. The anteromedian surface of the head below the antennae and between the facial ridges (*clypeus* of Townsend) (Text-fig. 2).

facial carina. A strong median vertical ridge on the face separating the antennae (*facial keel*) (Text-fig. 12).

The presence or absence of a facial carina, and its form when present, provide important key characters for recognition of some forms. In most Tachinidae the face is flat or only weakly raised medially, but a large facial carina is present in many Proseninae (*Prosenia*, *Senostoma*, *Billaea* and all Rutiliini). When a carina is present it is typically flattened or convex on its anterior surface, or prominently bulbous on its upper part and contracting to a sharper ridge towards the lower end, but a sharp roof-like carina occurs in *Euthera*. A true facial carina is absent in Tachininae and Goniinae, but a weak swelling may be present below and between the antennal bases (e.g. in *Macrochloria*).

facial profile. The anterior outline of the head between the antennal base and the epistome when viewed in profile.

facial region. The face, facial ridges and parafacials collectively.

facial ridges. The flattened or raised strips differentiated on each side of the face that separate it from the parafacials (*facialia*) (Text-fig. 2).

These are of great importance in taxonomy because of their variously modified form (whether ridge-like lateral margins to the sunken face or flattened and in the plane of the face), the extent of their visibility when the head is viewed in profile, and the extent to which they bear hair or setae. In many aberrant forms (e.g. *Therobia*, *Myiotrixia*) they are widened and flattened ventrally and extensively haired, but typically they are at least slightly ridge-like and have at least a few setulae immediately above the vibrissae (which in normal forms demarcate the ventral ends of the ridges); in many genera of Tachininae and Goniinae the ridges bear strong downcurved setae or setulae on most of their height.

fascia. A transverse band on the dorsum of thorax or abdomen.

frons. The anterodorsal region of the head bounded by the eyes laterally and extending from the ocellar triangle to the lunula; the interfrontal area and the parafrontals collectively.

Typically the frons is well developed in both sexes, though usually narrower in the male than the female, but is strongly reduced in some forms in which the head is holoptic or almost so (e.g. in males of many *Formosia*, Ormiini and

Palpostomatini or in both sexes of many Phasiini). The frons is of equal width in both sexes in all Siphonini and many Phasiinae, but rarely in other groups.

frontal setae. The setae of the paired rows of setae standing on the inner edges of the parafrontals (*Stirnborsten* of Mesnil) (Text-fig. 3).

These setae are strongly or moderately developed in most Tachinidae but may be weak and hair-like in Rutilini and Phasiini and occasionally in other groups. The rows may be partially obliterated in forms with holoptic or semi-holoptic heads. Normally the setae of each row are directed inwards so they cross medially (cruciate frontals), but in a few forms some or all of the frontal setae are directed upwards and backwards (reclinate frontals). In Phasiinae and Proseninae the rows of frontal setae extend downwards only to the level of the antennal base or but slightly beyond, but in most Tachininae and Goniinae the rows reach downwards at least to the level of the middle of the second antennal segment and often beyond (in the latter case the rows extend well down on the parafacials where, particularly in males, they may be irregularly doubled, e.g. in *Voriella*).

gena. The lateroventral part of the head between the bottom of the eye and the peristome or oral cavity (*cheek, jowl, peristom* of Mesnil) (Text-fig. 1).

The depth of the gena from the lowest point of the eye to the ventral margin of the head when seen in profile can provide an important character, especially its proportion in relation to eye height or width of the profrons (e.g. much narrower in Carceliini than in other tribes of Goniinae).

genal dilation. The swollen haired part of the gena continuous with the postbuccae and occiput (*Occipitale Erweiterung auf dem Peristom* of Mesnil) (Text-fig. 2).

Commonly the genal dilation occupies most of the gena and reaches well forwards towards the vibrissal angles, but in some forms is reduced or virtually absent (in which case the gena is bare or mainly so). The genal dilation is normally extensively haired and sometimes bears a few stronger setae.

hair fascicles. Dense, often convergent, tufts of hair on the abdominal venter.

These are a secondary sexual character of males and occur mainly in a few genera of Goniinae. When present they are normally restricted to the venter or sides and venter of the fourth tergite (e.g. *Pallexorista*) or of the fifth tergite (e.g. *Paropsivora*, *Zosteromeigenia*), but occasionally are present on two successive tergites.

humeral calli. The paired convexities forming the anterolateral corners of the thoracic dorsum (*humeri, posterior pronota, shoulders*) (Text-fig. 4).

humeral setae. The setae standing on the humeral calli (Text-fig. 4).

The number and arrangement of these setae, particularly whether the main ones stand in a straight line across the callus or in a triangle, is taxonomically important at several levels. Usually each callus bears at least two differentiated humeral setae, but there may be only one or even no clearly differentiated seta (e.g. in Phasiini).

infrasquamal hairs. A group of minute hairs or setulae on the mediotergite adjacent to the base of the lower calypter (Text-fig. 7).

Presence or absence of these hairs is sometimes a useful minor taxonomic

character (but great care is often needed in examining them as they are easily overlooked). They occur haphazardly in various genera in all the subfamilies but are of rare occurrence in Goniinae (mainly confined to some Blondeliini) and Proseninae (but occurring at least in some *Chetogaster*).

inner vertical setae. The main pair of erect setae standing on the summit of the vertex (*Innere Stirnborsten* of Mesnil) (Text-fig. 3).

This pair of setae is almost universally present in Tachinidae, though it is sometimes weak and hair-like in Phasiinae and some aberrant tribes. The two setae are most often subparallel to each other but are sometimes directed inwards and crossed, especially in some Tachininae. Subparallel inner verticals are the rule in Goniinae though genera with cruciate inner verticals occur (e.g. *Phorocerosoma*).

interfrontal area. The median area of the frons between the parafrontals (*interfrontalia*, *frontalia*, *frontal vitta*, *Stirnstreifen* of Mesnil) (Text-fig. 2).

In forms in which the head is holoptic or the eyes strongly approximated the interfrontal area is extensively obliterated and the parafrontals meet in part in the mid line of the frons.

intermediate abdominal tergites. The middle two of the apparent four main abdominal segments when seen from above, i.e. tergites 3 and 4 collectively.

intra-alar setae. The setae of the mesonotum standing external to the dorso-central setae and approximately in line with the middle of the postalar callus (Text-fig. 4).

The number and arrangement of these setae are of great taxonomic importance. The most complete complement (excluding the occasional haphazard supernumerary) is 1 + 3 *ia* setae and is found in the great majority of Goniinae. The presutural intra-alar is most often absent in the other subfamilies but is present, for example, in Voriini and Campylochetini (which have a 1 + 3 *ia* complement like most Goniinae) and sometimes elsewhere. Many Phasiinae and a few Tachininae have two strong posterior intra-alars that are widely spaced with the anterior one close to the transverse suture, e.g. *Leucostoma*, *Cylindromyia*, *Zita*, *Leverella*; this arrangement of two *post ia* is fundamentally different from that found in forms normally possessing three but occasionally lacking the anterior one (in which case the two remaining *post ia* stand near each other and the front one is remote from the transverse suture). A few forms completely lack intra-alar setae (e.g. some Phasiini and Ormiini) or they may be missing in isolated specimens of species normally possessing at least one. In *Cylindromyia* the anterior one of the two *post ia* is enormously strong and stands out of alignment with the hind one and unusually close to the pre-alar seta.

last section of Cu_1 . The part of vein Cu_1 between its junction with *m-cu* and its apex at the wing margin.

lateral scutellar setae. One or more pairs of marginal scutellar setae standing between the basal and subapical or apical pairs (Text-fig. 5).

These setae are frequently absent, and when present are usually weaker than the basals and subapicals.

lower calypter. The larger ventral one of the pair of membranous lobes at the wing base rigidly attached at its base to the suprasquamal ridge (*squama*, *thoracic squama*, *Thorakalschüppchen* of Mesnil).

Taxonomic characters of the lower calypter lie in its shape and vestiture, and at specific level in colour. It is well developed in all Tachinidae, and in some is grossly enlarged (e.g. in an undescribed Leucostomatine from Madagascar the lower calyptres of the male are so enormous that they completely hide the abdomen). In some forms (e.g. Palpostomatini) the lower calypter is subcircular posteriorly and diverges from the scutellum but in many it is very broad posteriorly and its inner edge abuts close to the scutellum (e.g. Sturmiini and many other Goniinae, many Phasiini). In a few Goniinae (Ethillini, some Winthemiini, some *Carcelia*) the outer edge of the lower calypter is bent abruptly downwards. Normally the upper surface is bare but fine erect hairing is present in a few forms and provides a useful key character (e.g. *Nemoraea*, some *Senostoma*, some *Rutilia* (*Chrysorutilia*)).

lunula. The crescentic sclerite between the antennal bases and the frons (*frontal lunule*) (Text-fig. 2).

Useful as a descriptive landmark, but otherwise of little value. Bare in all Tachinidae.

marginal scutellar setae. The strong setae around the edge of the scutellum collectively.

The total number of pairs of these setae can provide a useful key character. In a few forms the marginal setae are more numerous than usual, slightly or strongly spiniform, and not clearly differentiated into basals, laterals and subapicals (e.g. *Formosia*, *Rutilia*).

median marginal setae. Setae standing on the middle part of the hind margin of an abdominal tergite (the *MM* of Townsend).

mediotergite. The posterodorsal declivity of the thorax below the postscutellum and between the halteres (*lateral postscutellar plates* + *basiscutellum* of Townsend) (Text-fig. 7).

Not used in taxonomy except for presence or absence of fine hairs on the mediotergite near the base of the lower calypter (infrasquamal hairs, q.v.). Shape might have taxonomic value but has been insufficiently investigated. In some forms the middle part immediately ventral to the postscutellum (i.e. the *basiscutellum* of Townsend) is differentiated by a distinct line on each side from the lateral parts (i.e. the *lateral postscutellar plates* of Townsend), but in others (e.g. *Doleschalla*) there is little sign of such differentiation.

mentum. The sclerotized shaft or main plate of the proboscis (figs 12 & 13 in Crosskey, 1973).

Length and shape of the mentum of the proboscis have some taxonomic use, e.g. in Rutiliini in which the mentum in some forms seen in profile is distinctly tapering while in others it is parallel-sided.

mesonotum. The prescutum and scutum together (Text-fig. 4).

Markings of the mesonotum when present, e.g. vittae or spot-patterns, have some taxonomic usefulness. Strictly, the mesonotum is formed of a scutum

subdivided by the transverse suture, but the terms prescutum and scutum remain useful in taxonomy.

mesopleuron. The upper anterior part of the wall of the thorax between the anterior spiracle and the wing base (*anepisternite*) (Text-fig. 7).

Of little use taxonomically. Presence or absence of a dense pollinose spot on the centre of the mesopleuron is occasionally useful at specific level (e.g. in Rutiliini). A small anterodorsal mesopleural seta may be developed but is little used taxonomically.

notopleuron. A small subtriangular area differentiated laterodorsally on the thorax between the humeral callus and the wing base and external to the prescutum (Text-figs 4 & 7).

Of very little use in taxonomy except as a minor aid in distinguishing between a few Proseninae. In Doleschallini the notopleura are not noticeably differentiated from the prescutum, and in a few Rutiliini (e.g. subgenus *Neorutilia*) the posterior part of the notopleuron is unusually swollen and knob-like.

notopleural setae. The setae standing on the notopleuron (Text-fig. 4).

In very nearly all Tachinidae these number two, one anterior and one posterior. Rarely additional setae are developed, e.g. in the Philippines species of *Rutilia* (*Chrysorutilia*) in which the posterior knob-like swelling of the notopleuron bears two strong setae (in place of the usual single posterior notopleural).

occiput. The posterior surface of the head excluding the postorbital (*Hinterkopf* of Mesnil) (Text-fig. 1).

occipital setulae. Recumbent *black* setulae or strong hairs on the upper occiput behind the postocular row (*schwarzen Mikrochäten hinter den Postokularbörtschen* of Mesnil).

Presence or absence of these setulae is often a useful taxonomic character at various levels.

ocellar setae. The pair of setae standing very near the ocelli on the ocellar triangle or tubercle (Text-fig. 3).

Presence or absence, orientation, and occasionally the precise position of the insertions relative to the ocelli are of taxonomic value and provide useful key characters. When present the setae are most often curved forwards and downwards (proclinate ocellars), but occasionally backwards (reclinate ocellars) (e.g. in *Gonia*, *Elpe*, *Leucostoma*); in a few forms they curve directly outwards towards the eyes (divaricate ocellars) (e.g. in *Paragonia*).

ocellar triangle. The subtriangular area of the vertex on which the ocelli are placed (*ocellar plate, vertical triangle, ocellarium*) (Text-fig. 2).

Typically the ocellar triangle is slightly raised in relation to the rest of the vertex, and in forms with holoptic or subholoptic heads the ocelli are on a very prominent *ocellar tubercle* (e.g. most male *Palpostoma*). Ocelli are almost universally present in Tachinidae, but are vestigial or absent in some Ormiini (e.g. *Therobia*).

outer vertical setae. A pair of outwardly curved setae standing laterally on the vertex close to the eyes (Text-fig. 3).

These setae are weak or absent in many forms, and when present are usually only strong in females. They are present in females of Goniinae, but usually absent or represented by mere hairs in males (in the Siphonini both sexes have strong outer verticals).

palpi. The paired forwardly directed appendages of the proboscis arising between the base of the mentum and the oral cavity.

Presence or absence of palpi, and shape and size when present, often provide useful key characters. Palpi are usually present (virtually always in Goniinae) but may be totally absent as in *Cylindromyia* or vestigial (e.g. *Linnaemya*, *Chaetophthalmus*, some *Stomatomyia*). Exceptional development sometimes occurs in which the palpi project far beyond the epistomal margin (e.g. *Exechopalpus*) or are greatly swollen and clubbed (e.g. females of *Rutilotrix*).

parafacials. The paired anteroventral areas of the head separating the eyes from the facial ridges and lying between the parafrontals and the genae (*parafacialia*, *Wangen* of Mesnil) (Text-figs 1 & 2).

These areas are taxonomically important for their vestiture and breadth in relation to, for instance, the width of the face or the antennae. Most often the parafacials are bare, but they may be haired to a varying extent or may carry strong bristles. In many forms the descending rows of frontal setae reach down on to the upper parts of the parafacials, *but these setae are discounted when the parafacials are described as bare* (in descriptive practice the 'parafacials' normally means those parts of them lying ventrally to the lowermost frontal setae).

parafrontals. The paired areas forming the outer parts of the frons and abutting against the eyes (*orbits*, *fronto-orbital areas*, *parafrontalia*) (Text-figs 1 & 2).

Normally the parafrontals are separated from each other by the interfrontal area, but in some forms they meet each other in the mid-line of the frons and partially or wholly obliterate the interfrontal area. Usually when they meet the head is holoptic or nearly so, but a very few forms with very broad frons have parafrontals that not only meet in the mid line but have lost most or all of the line of union so that the entire frons is formed of completely coalesced parafrontals (e.g. males of most *Heterometopia*). Hairing of the parafrontals can be of minor taxonomic usefulness at specific level.

peristome. The lower margin of the head around the buccal opening.

The term is used by Mesnil for the whole of the area here termed the gena.

peristomal setae. Lower marginal setae of the head standing on the peristome (Text-fig. 3).

petiolate. Provided with a petiole (q.v.) (said of wing cell R_5).

petiole. The short length of wing vein formed by the union of the apices of veins R_{4+5} and M_1 in wings in which cell R_5 is closed before the wing margin. See under cell R_5 above.

pleurotergite. The convex area of the side of the thorax lying above the hind spiracle and between the pteropleuron and the mediotergite (*squamopleuron*, *supra-spiracular convexity*).

This area is bare (i.e. has only a nap of microscopic pubescence) in nearly all

Tachinidae but has taxonomic importance as a taxonomic feature in a few forms in which it bears long dense hair (e.g. *Microtropesa* and *Paratropesa*).

pollinose. With a covering of pollinosity (q.v.).

pollinosity. A nap-like covering to any part of the body formed by closely aggregated ultramicroscopic pubescence.

The extent, density and colour of pollinosity can provide taxonomic characters and are largely responsible for the general appearance of many Tachinidae. Banded or spotted patterns are typically produced either by islands of dense pollinosity surrounded by less pollinose areas, or alternatively by non-pollinose islands in areas that are mainly thickly coated with pollinosity (e.g. the conspicuous spot patterns of *Amphibolia*). When pollinosity is not evident at normal magnifications of the entomological microscope (up to $\times 100$ or $\times 150$) or is very inconspicuous on any area then the area is said to be 'non-pollinose'. When the cuticle is dark, non-pollinose areas are typically metallic and the extent of metallic colour can be important taxonomically (e.g. in Rutiliini).

postabdomen. The part of the abdomen including the terminalia lying beyond segment 5 (the last segment normally readily visible).

In many forms much of the postabdomen is concealed and tergite 5 forms the end of the immediately visible abdomen. In some forms the postabdomen is more conspicuously developed than normal and may be distinctly recurved under the main part of the abdomen (preabdomen) (e.g. *Cylindromyiini*) and may bear elaborate modifications associated with oviposition (e.g. various forcipate processes in female Phasiinae).

postalar calli. The paired convexities forming the posterolateral corners of the thoracic dorsum (Text-figs 4 & 7).

postalar setae. The strong horizontal setae standing on the postalar calli (Text-fig. 4).

In nearly all Tachinidae there are two strong postalar setae, but in all Rutiliini there are three or more (sometimes as many as six or seven) strong postalars, the distinction between three, and four or more, being very important in taxonomy of the group. Outside of Rutiliini the development of a strong third postalar seta is rare (but occurs, e.g., in some *Microtropesa*). Rarely only a single strong postalar seta is developed (e.g. in some Phasiini).

postalar wall. The vertical declivity forming the outer surface of the postalar callus (Text-fig. 7).

This area is of taxonomic value in the Rutiliini where the postalar wall bears a dense tuft of hair in *Formosia* and *Formodexia* Crosskey that is absent in other genera. These genera appear to be the only forms represented in the Tachinidae with such hair (in all others the postalar wall is bare or at most has only one or two hairs on its extreme upper part immediately below the rounded haired outer lip of the callus).

postbucca. A vaguely defined area between the gena and the occiput forming the posteroventral corner of the head (*postgena*) (Text-fig. 1).

posteroventral declivity of the thorax. That part of the thorax laying between the base of the abdomen and the insertions of the hind coxae (Text-fig. 7).

In most Tachinidae the hind coxae are rather close to the abdominal base and the posteroventral declivity of the thorax consists of a median membranous area flanked by curved sclerotized areas (the metapleura). In a few forms (e.g. *Cylindromyia*, *Doleschalla*) the abdomen and the metacoxae are much more remote from each other than is usual and the entire posteroventral declivity of the thorax forms a fully sclerotized bridge between them; this forms an important taxonomic and key character.

posthumeral setae. One or more setae standing anterolaterally on the prescutum immediately behind the humeral callus (Text-fig. 4).

Development of these setae is rather variable and their taxonomic usefulness very limited. The *ph* setae are usually most strongly developed in Goniinae, in which two moderately strong posthumerals are normally present on each side, and least strongly represented in Phasiinae and Proseninae in which they may be absent or hair-like.

postocular row. The regular row of setulae or long hairs on the upper and outer edges of the occiput immediately behind the eyes (Text-fig. 3).

postorbits. The narrow laterodorsal strips of the head lying between the eyes and the postocular rows (Text-fig. 1).

postscutellum. The transverse swollen lobe below the scutellum and dorsal to the mediotergite (*subscutellum*, *infrascutellum*, *postnotum*) (Text-fig. 7).

This is almost universally present in Tachinidae and strongly convex. It is very weakly developed in a few forms (e.g. Palpostomatini) and is strongly produced backwards, squared and flattened in some Phasiini (e.g. *Campbellia*, *Alophora* subg. *Mormonomyia*). The postscutellum is always bare.

postsutural. Behind the transverse suture of the mesonotum.

pre-alar seta. A seta standing at the extreme anterolateral corner of the scutum anterior to, and approximately in line with, the supra-alar setae (*first supra-alar seta* of authors) (Text-fig. 4).

This seta is of the very greatest importance in tachinid taxonomy because of its variability in size, and, to a lesser extent, because of its presence or absence. The seta is universally present in the Goniinae (though it may be very weak) and may be either small (shorter than the first *post ia* seta or at most subequal to it) or very large (longer and stronger than the first *post ia* seta and usually also longer than the first *post dc* seta), and this distinction holds true almost without exception for the differentiation of two groups of Goniine tribes. In Phasiinae, Proseninae and most Tachininae the pre-alar seta is of the small type, and is sometimes absent (e.g. in Phasiini, some Minthoini and sometimes haphazardly in Proseninae).

preapical (discal) scutellar setae. A pair or more of recumbent or semi-recumbent setae standing on the scutellum in advance of the marginal setae (Text-fig. 5).

prescutum. That part of the mesonotum lying anterior to the transverse suture (Text-figs 4 & 7).

Morphologically this is the anterior part of a divided scutum but the term

remains useful in taxonomy. The prescutum as such has little use in taxonomy except for its patterning and pollinosity.

presutural. In front of the transverse suture of the mesonotum.

presutural seta. A single seta standing on the outermost part of the prescutum near the notopleuron and approximately in line with the pre-alar and supra-alar setae (*presupra-alar* seta of Townsend) (Text-fig. 4).

This is the most consistently stable and universally present thoracic seta in the Tachinidae, and on this account is not used in taxonomy. It is very nearly always present at least as a differentiated hair, and in the overwhelming majority of forms is an extremely strong seta even when other parts of the chaetotaxy are much reduced.

prevertical setae. A pair of outwardly directed setae standing on the upper ends of the parafrontals.

These setae occur mainly in females of certain Tachininae and are very rarely present in Goniinae (though found in some *Spoggosia* and *Baumhaueriina*, at least). They appear to represent a pair of orbital setae that curve outwards over the margins of the eyes instead of backwards towards the vertex (as is typical in orbital setae).

proclinate. Directed forwards, or forwards and downwards.

proclinate orbital setae. A pair or more of strong downwardly directed setae standing externally on the parafrontals near the eyes (*fronto-orbital setae*, *Aussere Orbitalborsten* of Mesnil) (Text-fig. 3).

These setae may be absent in both sexes, but typically two pairs are present in females and none in males. In some forms (e.g. all Siphonini) they are present in males as well as females. Occasionally a series of several (up to six or seven, rarely more) pairs may be present in both sexes (e.g. *Halydaia*, *Ceracia*).

profrons. A weakly defined area where the parafrontals and the parafacials meet (Text-figs 1 & 13).

Typically the area of the profrons is somewhat projecting and seen in profile is the widest part of the head that is visible anterior to the eye. The width of the profrons seen in profile in relation to the depth of the gena is occasionally a useful character.

propleural seta. A seta (sometimes duplicated) standing on the extreme anteroventral corner of the thorax (*Prästigmätikalborste* of Mesnil) (Text-fig. 7).

This seta, even if only hair-like, is differentiated in almost all Tachinidae and has very limited taxonomic use. It is totally absent in a few Goniinae (e.g. *Anacamptomyia*, *Euwespihora*, some *Carcelia* s.l. species), rarely elsewhere.

propleuron. The flattened area of the front edge of the thorax below the humeral callus (Text-fig. 7).

This area has considerable taxonomic importance and provides an easily seen key character according to whether it is bare (as is most often the case) or haired. The area never has strong setae. Hairing of the propleuron occurs sporadically throughout the Tachinidae, but particularly is present in all Rutiliini and many Tachininae (e.g. *Campylocheta*). In the Phasiinae the

propleuron is almost always bare, and in the Goniinae hairing of the propleuron is almost entirely confined to certain Blondeliini and Neaerini (the propleuron appears to be consistently bare in the tribes of Goniinae in which the pre-alal seta is very large).

prosternal membrane. The extensive membranous area on either side of the prosternum (Text-fig. 9).

This membrane is only of taxonomic value according to whether it is bare (as in the overwhelming majority of Tachinidae) or haired. Hairs on the prosternal membrane occur mainly in *Rutilia* subg. *Chrysorutilia* and a few allied Rutiliini, but elsewhere are of very rare occurrence (found, for example, in some *Chaetophthalmus* species).

prosternum. The strong ventral plate of the thorax lying between and in front of the fore coxae (Text-fig. 9).

One of the most important taxonomic characters in the Tachinidae is provided by the presence or absence of vestiture on the prosternum. The vestiture when present consists of fine hairs or a few strong setulae on each side of the middle part of the prosternum which are directed outwards or downwards, or of some soft hair on the anterior corners (as in some *Rutilia* and some *Chaetophthalmus* species). The prosternum is totally bare in (apparently) all Phasiinae, almost all Proseninae and the great majority of Tachininae, but is almost universally haired or setulose in the Goniinae (even if the vestiture consists only of a single hair on each side); a few Goniinae have the prosternum bare, these including several genera of Blondeliini and *Blepharella* in the Sturmiini.

prostigmatic seta(e). One or more strong setae anterolaterally on the thorax below the anterior spiracle (*mesopleurospiracular* setae of Townsend, *Substigmatikalborsten* of Mesnil) (Text-figs 7 & 8).

One or more of these setae almost always present and directed upwards. The genus *Peribaea* (tribe Siphonini) is very exceptional in having two equally strong prostigmatic setae of which the upper one is directed upwards and the lower one strongly downwards (an arrangement apparently found nowhere else in the family) (Text-fig. 8).

pteropleural seta. A seta standing on the upper edge of the pteropleuron (Text-fig. 7).

Presence or absence of this seta can provide an important character at various levels. Sometimes it is only weakly differentiated from the general pteropleural hairing and sometimes is duplicated. The seta is absent or very weak in nearly all Phasiinae and Proseninae and strong in nearly all Goniinae; in the Tachininae it is developed to various degrees in different genera or tribes, and if strong its actual size in relation to other structures is sometimes taxonomically useful (e.g. in African *Linnaemya*).

pteropleuron. The area of the side of the thorax immediately behind the mesopleuron and below the wing base (Text-fig. 7).

The only use of this area in taxonomy (apart from the pteropleural seta, q.v.) is for the extent of its hair vestiture. Normally the anterior half of the

pteropleuron (and sometimes much of the lower part) is bare but in a few taxa (e.g. the subgen. *Chrysorutilia*) the hairing extends further forwards of the pteropleuron than is usual.

reclinate. Directed backwards, or upwards and backwards.

reclinate orbital setae. One or more pairs of erect or backwardly directed setae standing on the upper parts of the parafrontals (Text-fig. 3).

The number of pairs of these setae can provide an important taxonomic feature, as in Sturmiini in which genera with one pair are rather sharply differentiated from genera with two or more. The setae are best differentiated in the Goniinae and some Tachininae, but may be absent in males of some forms though present in females (e.g. *Winthemia*) or may be very imprecisely differentiated from the rows of frontal setae. Reclinate orbital setae are absent or at least indefinite in Phasiinae and Proseninae. In genera in which males have a single pair of strong isolated reclinate orbitals the females may show two pairs, but have the lower pair weaker than the upper (main) pair and situated closer to each other.

recumbent. Lying down or appressed to the surface (said of hairs or setae to contrast their orientation with others that stand upright) (cf. erect).

scutellum. The large hemispherical or subtriangular lobe of the thoracic dorsum behind the scutum.

The shape and degree of flattening of the scutellum, and the nature of its hairing, provide minor taxonomic characters.

scutum. That part of the mesonotum lying posteriorly to the transverse suture (Text-figs 4 & 7).

Morphologically this is only the posterior part of a divided scutum but the term remains useful in taxonomy. The scutum as such has little use in taxonomy except for its patterning and pollinosity.

second arisal segment. The more distal one of the two basal segments of the arista.

This segment varies in its length (to a greater extent than the first arisal segment) and can provide a useful feature.

second costal sector. That segment of the costa lying between the apices of veins Sc and R_1 (Text-fig. 10).

The presence or absence of small fine recumbent hairs along the ventral surface of this costal sector provides a useful taxonomic and key character at various levels in different parts of the family. The hairs when present are additional to, and quite distinct from, the marginal costal setulae. Sometimes whole tribes have one condition or the other (e.g. second costal sector bare below in all Rutiliini or haired below in all Thelairini), but elsewhere the character may be generic only (e.g. in Blondeliini).

seta, setula. Not differentiated from each other on any absolute criterion, but *seta* generally reserved for any strong and obvious bristle forming a particular component of the formalized chaetotaxy, and *setula* for a small stiffened hair. Setulae are commonly serially arranged, as along the costal margin, down the facial ridges or in the postocular row.

spiniform setae. Those setae that are exceptionally thickened and spine-like and lack the even tapering from base to apex of typical setae.

These occur commonly in Rutiliini and Tachinini and to a lesser extent elsewhere (e.g. some on the scutellum of Goniini).

sternite 5. The deeply divided last visible abdominal sternite of the male (Text-fig. 20).

sternites. The sclerotized plates of the mid venter of the abdomen (Text-fig. 20).

The extent of exposure or concealment of the sternites by the ventral ends of the tergites can provide a useful taxonomic character. The sternites may be completely exposed in their surrounding membrane (as in many Phasiini) or completely concealed by overlapping of the tergites (as in Goniinae), and intermediate conditions occur in which the anterior sternites are mainly or fully concealed and the fifth sternite and part of the fourth exposed. Vestiture of the sternites is occasionally of minor taxonomic use.

sternopleural setae. Setae standing on the *upper* part of the sternopleuron (Text-fig. 7).

The number and arrangement of these provide very valuable characters. Rarely they are totally absent or only one (posterior) one is present, but typically there are two or three (arranged 1 + 1 or 2 + 1). Four or (very rarely) more occur in some Goniinae and a few Tachininae and the arrangement of these may be significant (e.g. a characteristic group of genera of Sturmiini has the sternopleurals constantly arranged 2 + 2). When three are present the size of the lowermost seta in relation to the others may be useful.

sternopleuron. The large lateroventral subtriangular area of the thorax between the fore and mid coxae and below the mesopleuron and pteropleuron (Text-fig. 7).

Normally important only for its vestiture and this has very limited taxonomic use. A characteristic row of fine regular recumbent hairs in front of the mid coxa is present in *Actia*, and the ventralmost hairing may be modified into strong spiniform setae.

subapical scutellar setae. The pair of setae inserted posterolaterally on the scutellar margin (Text-figs 5 & 6).

These setae, together with the basals, are the most universally present setae on the scutellum and typically are the strongest pair. Their distance apart from each other at the base in relation to the distance between the insertion of one subapical seta and the basal seta of the same side of the scutellum provides an important character. Also important is the direction of the subapicals, e.g. whether diverging from each other as in Blondeliini or converging and crossing at their tips (enclosing the apical setae) as in Siphonini and Neaerini.

sublunular bulla. A knob-like swelling between the antennal bases immediately below and continuous with the lunula.

This occurs mainly in Phasiini, where in *Alophora* and allied genera the bulla is often polished and shining.

supra-alar area. The outer edge of the scutum above the wing base.

supra-alar setae. The outermost setae standing on the scutum (*postsupraalar bristles* of Townsend), other than the pre-alar seta (Text-fig. 4).

These are normally two, one behind the other, with the anterior one very strong. The anterior one is, with the presutural seta, one of the most stable and universally present setae in the tachinid chaetotaxy. Sometimes one or two supernumerary supra-alars may be developed in addition to the normal two, or the posterior supra-alar may be absent or hair-like. The second or posterior *sa* seta is always present in Goniinae but is absent in such tribes as the Phasiini and Palpostomatini and often in Ormiini.

Some authors consider the pre-alar seta (*pra*) as the first of the supra-alar setae and number the others accordingly (e.g. the posterior supra-alar is then the third supra-alar), but this is an undesirably confusing terminology. When both the pre-alar and the posterior supra-alar are absent (as in Phasiini and Palpostomatini) the anterior supra-alar is the only seta present on the supra-alar area and therefore stands very conspicuous and isolated.

suprasquamal ridge. The weakly sclerotized area at the base of the postalar wall to which the lower calypter is attached marginally (*tympanic ridge* of Townsend) (Text-fig. 7).

This structure is taxonomically useful according to whether it is bare or haired. The suprasquamal ridge is bare in all Phasiinae and Goniinae, and in the Proseninae hairing is confined to the Rutiliine genera *Rutilia*, *Amphibolia* and *Chrysopasta*; the ridge is apparently bare in all Tachininae except *Servillia jakovlewii* (Portschinsky).

surstyli. The outer pair of articulated processes attached to the epandrium of the male hypopygium (*paralobes*, *outer forceps*, *tenth sternite lobes* of Townsend) (Text-figs 21 & 23).

The form of the surstyli is of great taxonomic value at specific level but they have relatively little taxonomic use at higher levels.

tegula. The small anterior sclerite at the extreme base of the wing before the basicosta (*epaulet*).

tergites. The main segmental plates of the abdomen forming almost the entire circumference of each segment.

The tergites are taxonomically important in so far as their individual and collective forms give shape to the abdomen and determine, for example, whether it is elongate subcylindrical as in *Cylindromyia* and *Doleschalla*, or rather broad and flattened as in many Phasiini and Rutiliini, or subovate as in the majority of forms. In the Goniinae the ventral ends of the tergites meet in the mid-line of the abdomen, but in many forms in the other subfamilies they do not meet each other and the sternites are then exposed. Lengths of the tergites relative to each other, special modifications such as the depression of T₅ found in many Rutiliini or the keel-like form of the abdominal venter in some Blondeliini, and pollinosity and pattern on the tergites can all provide useful characters.

third costal sector. That sector of the costa lying between the apices of veins R_1 and R_{2+3} .

transverse suture. An impressed line across the mesonotum dividing it into anterior and posterior parts (prescutum and scutum, q.v.) (Text-figs 4 & 7).

upper calypter. The smaller dorsal one of the pair of membranous lobes at the wing base (*alar squama*).

This has little use in taxonomy but is of note in *Prodiaphania* (tribe Rutilini) in which, when the wings are closed, it is as long as or almost as long as the lower calypter. In other Tachinidae it is normally much shorter.

venter. The lower surface as a whole (especially of the abdomen).

vertex. The upper surface of the head between the eyes and around the ocellar triangle (Text-figs 1 & 2).

This area is precisely delimited laterally by the eyes but it is rather vaguely defined from the frons and occiput. The width of the vertex varies greatly according to how closely the eyes are approximated and is typically wider in females than males. The width when seen from above in relation to total head width provides important specific differences. When the head is fully holoptic (e.g. in some Palpostomatini) all that remains of the vertex is a prominent ocellar tubercle (see ocellar triangle).

vestiture. Setae and hairing collectively.

vibrissae. Paired setae inserted anteroventrally on the head at the lower ends of the facial ridges and directed forwards (Text-fig. 3).

Typically the vibrissae are extremely strong and curve forwards and inwards like a pair of tusks; often they are the strongest setae borne on the head. In some forms they are reduced and scarcely distinguishable from the peristomal setae (below them) or from the small setulae on the lower ends of the facial ridges (above them). Short stubby non-crossing vibrissae occur in some forms.

vibrissal angles. The corners of the head, typically rather prominent, on which the vibrissae stand (Text-fig. 1).

vibrissal axis. An imagined horizontal line through the head profile at the level of the vibrissal insertions (Text-fig. 14).

vitta. A longitudinal band or line on the dorsum of the thorax or abdomen.

vittate. Marked with vittae.

wing venation. The rigid veins that support the wing membrane collectively.

This provides many important taxonomic characters at several levels, according to the proportions shown by different vein lengths, the fusion or non-fusion apically of R_{4+5} and M_1 , the position of the bend of vein M in relation to the wing margin, the evanescence of parts of veins (especially loss of M_1), the positions at which long veins abut on the costa, and to whether certain veins reach or fail to reach the wing edge. In addition the extent and presence or absence of setulae on certain veins can provide useful characters. Setulae may occur on veins R_1 , R_{4+5} , or Cu_1 but not on the other long veins and never on the cross-veins; they are usually more extensive when present on the upper surface of the wing but may occur ventrally also on R_1 and R_{4+5} (especially on the node).

KEY TO AUSTRALIAN SUBFAMILIES OF TACHINIDAE

The satisfactory classification of the Tachinidae into subfamilies is a matter of great difficulty and specialists are still far from agreed on the number and scope

of the subfamilies that should be recognized and on the combinations of characters that should be used to define them. Most taxonomists currently recognize relatively few subfamilies (normally between four and six) but a large number of tribes, but none of these family-group taxa are susceptible of simple and unequivocal definition that will render their members immediately identifiable on straightforward key characters. The existence of many aberrant forms, and of much convergent evolution, compounds the classificatory difficulties still further and ensures that – view them how we may – it is simply impossible to define the subfamilies succinctly or to key them out (at least on the external morphology of the adults) with any precision. Undoubtedly, however, recent and continuing studies on the male genital structure, the female reproductive habit, the morphology of the larvae (especially the first instar larvae), and of the host relations, are doing much to enlighten specialists on the probable phyletic relationships, and hopefully this newly acquired data may lead to more concrete subfamilial definition in the course of time. Meanwhile, it is possible to recognize many of the members of the more distinctive subfamilies (Phasiinae, Goniinae) on their overall facies, even though it is extremely difficult to fix their characters in an unexceptionable way that is satisfactory for key construction, and a knowledge of the host relations of any tachinid parasite can be of immense value in placing its subfamilial identity – for example, any Australian tachinid with a host in the Hemiptera belongs in the Phasiinae.

In the present work four subfamilies are recognized, the Phasiinae, Proseninae (=Dexiinae), Tachininae and Goniinae, but it is freely admitted that the Tachininae in the sense here used is a heterogeneous assemblage of forms in which two or three distinct subfamilies ought probably to be acknowledged; but until a clearer picture of the interrelationships of the included forms emerges it remains useful to treat all the Australian tachinids that are clearly not either Phasiinae or Proseninae or Goniinae as constituting one subfamily (for which the name Tachininae is nomenclaturally correct).

With the difficulties in defining the subfamilies, and the confusing overlap in many of their characters, it is impossible to construct a workable key even to the small number of subfamilies here recognized that will permit each and every specimen to be placed unequivocally in a subfamily. The key that follows is only a *tentative guide* to the probable suprageneric grouping to which any specimen belongs. In order to keep the key short and simplified (without long confusing couplets that attempt to cover every exceptional or aberrant form) certain tribes have been run out individually and sometimes there is more than one exit for a particular subfamily. Some extremely poorly known forms of very uncertain subfamilial position (e.g. *Myiotrixia*, *Amphitropesa*, *Neximyia*) have been omitted from consideration, as to include them would so complicate the key as to negate much of its value. When the names of taxa are juxtaposed this does not imply close phyletic relationship.

- 1 Ocelli absent. Prosternal region grossly inflated, visible from side view. [*Probably parasites of Orthoptera*] **Ormiini** (Tachininae, part) (p. 57)
 – Ocelli present. Prosternal region normal, not visible in profile 2

- 2 Face with a heavy facial carina extending from epistome to lunula between the antennae and convex, bulbous or flattened on much or all of its anterior surface (Text-fig. 12). Eyes bare. [*Parasites of Coleoptera*]. **PROSENINAE** (part) (p. 41)
- Face without such a facial carina, usually flat or sunken, if weakly carinate just below antennal bases (*Macrochlora*) then eyes haired, if bullate between antennal bases only (*Alophora*) then cell R_5 long-petiolate (but *sharp* ridge-like facial carina on whole face present in Eutherini). 3
- 3 One supra-alar seta (Text-fig. 54). Pre-alar seta absent (except *Saralba*). Usually one *post ia* seta or none. Head often holoptic or almost so and upper eye facets often conspicuously enlarged. Eyes always bare 4
- Two or more supra-alar setae (Text-figs 56-63) (hindmost sometimes weak, second may be absent in Minthoini). Pre-alar seta almost always present (sometimes hairlike). Normally two or three *post ia* setae. Head never fully holoptic and eye facets never greatly enlarged. Eyes bare or haired 5
- 4 Lower calypter very broad, straight or concave on its hind margin. Prosternum bare. Labellae without palpiform processes. Not more than one *post ia* seta. [*Parasites of Hemiptera*]. **PHASIINAE** (part) (p. 29)
- Lower calypter subcircular posteriorly and strongly diverging from the scutellum. Prosternum on each side with a long seta directed downwards. Labellae usually with a distinct pair of palpiform processes. Normally two *post ia* setae. [*Parasites of Coleoptera*]. **Palpostomatini** (Tachininae, part) (p. 53)
- 5 Two *post ia* setae present standing widely apart from each other with the anterior one not far from the transverse suture, the setae either subequal in size or the anterior one enormous and much stronger than the posterior one (Text-figs 56 & 58). Either the hind coxae very widely separated from the abdominal base by a deep completely sclerotized bridge, or apex of ♀ abdomen with forceps-like processes, or both. Postabdomen usually strongly recurved under the preabdomen. Wing with cell R_5 closed and long-petiolate (Text-figs 76 & 78). [*Parasites of Hemiptera*]
- **PHASIINAE** (part) (p. 29)
- Two or more (usually three) *post ia* setae present which increase in size towards the hindmost (Text-figs 57, 59-63), if only two are present then the anterior one far from the transverse suture (except in Parerigonini and in *Minthoxia* in which two widely spaced subequally strong *post ia* setae present, but then other characters not fitting). Hind coxae and abdominal base not very remote from each other, area between them membranous medially; end of ♀ abdomen never forcipate. Postabdomen not distinctly recurved under preabdomen. Wing with cell R_5 usually open, a few exceptions (e.g. *Euthera*). [*Not parasites of Hemiptera, except probably Eutherini*] 6
- 6 Wings with a pattern of incomplete transverse black bands (Text-fig. 77). Cell R_5 with long petiole (Text-fig. 77). Face with a very prominent *sharp* median ridge up its whole height (Text-fig. 24). Antennae exceptionally long, their apices reaching beyond the epistomal margin. [*Probably parasites of Hemiptera, no Australian records*] **Eutherini** (Phasiinae, part) (p. 39)
- Wings without any bold black pattern. Cell R_5 usually open. Face without a sharp median ridge up its whole height (if trace of a sharp ridge ventrally then this swelling dorsally). Antennae of varied length but not exceeding the epistomal margin. [*Not parasites of Hemiptera*] 7
- 7 Forms with the following characters present simultaneously: eyes bare; antennae short and antennal axis at or below level of eye middle (Text-figs 29-30); gena broad, at least as wide as length of third antennal segment and often almost as wide as antennal length (Text-figs 29-30); no definite reclinate orbital setae; rows of frontal setae descending to level of lunula or only just beyond; prosternum bare; *pra* seta small; scutellum with three pairs of marginal setae (basals, subapicals and strong crossed horizontal apicals, Text-fig. 70) (rarely some supernumeraries

also); abdominal T₁ + 2 excavate to its hind margin; infrasquamal hairs absent; ♂ with long slender L-shaped aedeagus (Text-fig. 22). [*Parasites of Coleoptera*]

PROSENIINAE (part) (p. 41)

[Note: A few non-prosenine forms conform very closely with the characters cited. If specimens conform but from experience do not appear to have a prosenine facies they should be tested next in the tribal keys for Tachininae or Goniinae. If characters appear to conform but the known host is *not* a beetle then pass to couplet 8].

- Forms without such combination of characters present simultaneously, normally failing on at least one and usually more than one of the characters cited. [*Parasites mainly of Lepidoptera, occasionally Hymenoptera, Coleoptera, Orthoptera, Phasmatodea, Mantodea*]. 8

[Note: If the eyes are densely haired, or the prosternum is *not* bare, or the *pra* seta is very long and strong, then pass immediately to couplet 8 without further consideration: if the eyes are bare, the prosternum bare and the *pra* seta weak then a critical consideration of the other characters cited in the first half of couplet 7 must be made at this point.]

- 8 Pre-alar seta (*pra*) very strong (longer and stronger than first *post ia* seta or the first *post dc* seta) and the prosternum setulose. Propleuron bare. Second costal sector bare ventrally. Infrasquamal hairs absent. [*Parasites of Lepidoptera or Hymenoptera Vespoidea, one genus (Pseudalsomyia) on Cerambycidae*]

GONIINAE (part) (p. 74)

- Pre-alar seta (*pra*) small or absent (usually not larger than first *post ia* seta, if larger as in some Tachinini then prosternum bare). Prosternum bare or setulose. Propleuron bare or haired. Second costal sector bare or haired ventrally. Infrasquamal hairs sometimes present. [*Parasites of Lepidoptera, Coleoptera, Hymenoptera Symphyta, Orthoptera, Phasmatodea, Mantodea*] 9

- 9 Prosternum bare (haired in a few exceptions but then either hairing on anterior edge of prosternum and on prosternal membrane, or arista plumose, or two strong widely separated *post ia* setae and fore tarsi flattened, or epistomal margin strongly projecting and vibrissae inserted high above level of epistomal margin, or pteropleural seta absent and vein R_{4+5} setulose on most of its length). Pteropleural seta present or absent. Epistome often strongly projecting and easily visible in profile, the vibrissae then often high above level of epistomal margin (as in Text-figs 41-46). [*Parasites of Lepidoptera (except Apatemyia on Coleoptera)*]

TACHININAE (p. 50)

- Prosternum haired or setulose but sometimes only a single hair on each side (Text-fig. 9) (bare in a *very* few exceptions but then subapical scutellar setae very strongly diverging and either apical scutellar setae absent or male with dense hair fascicles on T₅). Pteropleural seta present. Epistome not projecting and invisible in profile or at most only rather weakly projecting, vibrissae usually not much above level of epistomal margin (e.g. Text-fig. 49). [*Parasites of Lepidoptera, Coleoptera, Hymenoptera Symphyta, Phasmatodea, Mantodea*]

GONIINAE (part) (p. 74)

[Note: It is almost impossible to separate the Tachininae from the Goniinae with small pre-alar seta in a satisfactory way. The distinctions given in couplet 9 should help to separate specimens of the two subfamilies, but in cases of doubt specimens should be run in the tachinine and goniine tribal keys.]

SUBFAMILY PHASIINAE WITH KEYS TO THE TRIBES AND GENERA

This subfamily is morphologically very diversified but biologically very discrete, for the hosts of the true phasiines are all in the Hemiptera-Heteroptera and all

Tachinidae known to have hemipterous bugs as their hosts belong to the subfamily. In the past the group has often been treated as a separate family (Phasiidae), and certainly many of its members are very atypical looking tachinids – having widened coloured wings and reduced or almost non-existent chaetotaxy; but these less typical tachinids are interconnected with the more typical Tachinidae by many forms with intermediate characters and specialists are now mainly agreed on regarding the phasiines as a subfamily of Tachinidae. Some anomalous forms with coleopterous hosts such as the Strongygastriini and Palpostomatini are sometimes placed among the Phasiinae but it appears better, on the evidence so far available, to limit the subfamily to those forms parasitic on Hemiptera.

The subfamily is moderately well represented in Australia, where all the principal tribes, except the Gymnosomatini, occur. There is an early record of a member of the Gymnosomatini from the Australian area, namely that of Macquart (1847 : 97 (81)) who recorded a specimen of the European species *Gymnosoma rotundatum* (L.) from Tasmania, but it now seems certain that this record must be in error: Malloch (1929a : 112) doubted the occurrence of *Gymnosoma* in Australia as he had never seen the genus from this area, and no specimen has been found since to confirm its existence there. It now appears safe to conclude positively that the Gymnosomatini (certainly the genus *Gymnosoma* Meigen) are absent from Australia.

The main characteristics of the Phasiinae are as follows. Head usually without a facial carina, sometimes with a distinct sublunular bulla between antennal bases, occasionally with weak median ridge, only with a strong sharp keel in Eutherini; rows of frontal setae (often weak and hair-like) descending to level of lunula or first antennal segment (rarely further); ♂ without reclinate orbital setae; head sometimes holoptic in *both sexes* and sometimes with greatly enlarged facets on upper parts of eyes in *both sexes*; eyes always bare; inner vertical setae if present parallel or crossing; arista short pubescent; prosternum and prosternal membrane bare; humeral callus most often with not more than two distinct setae; *post ia* setae almost always 0–2 (except nearly always three in Eutherini); dorsocentral setae very varied, often much reduced; pre-alar seta present or absent, if present nearly always very small (strong sometimes in Cylindromyiini); one or two *sa* setae; postalar callus with not more than two setae; normally from one to three *stpl* setae (four aberrantly) infrasquamal hairs present or absent; usually no definite pteropleural seta; scutellum typically with two or three pairs of marginal setae and without discal setae, sometimes only one pair of marginals (the basals, e.g. in some *Alophora*), rarely four pairs (some Leucostomatini), discals usually present in Eutherini; wing veins bare or at most with only a few minute hairs (long hairs occasionally in Cylindromyiini) on basal node of R_{4+5} ; mid tibia usually with *v* submedian seta (absent in some Phasiini); hind tibia with or without *pv* apical seta; suprasquamal ridge bare; abdomen with $Tr + 2$ excavate only at base, sometimes virtually no excavation (except in Eutherini where excavation reaches hind margin); sternites concealed or exposed; ♂ aedeagus with non-mobile union of basiphallus and distiphallus, distiphallus without longitudinal microstructures ('POS' type) (see Dugdale, 1969).

KEY TO AUSTRALIAN TRIBES OF PHASIINAE

- 1 Wing with bend of vein *M* forming a gentle even curve and without trace of an *M*₂ appendix (Text-figs 74–75). Abdomen dorsoventrally flattened (except in *Saralba* with clavate abdomen) and usually devoid of strong setae. Abdominal sternites partially or completely exposed, ventral ends of tergites not meeting in the mid line. One supra-alar seta. One *post ia* seta or none. Hind tibia without *pv*

- apical seta. Scutellum with two pairs of marginal setae (sometimes only the basal pair developed and the hind pair not differentiated). Lower calypter very broad and rather straight or even slightly concave on its hind margin. Infra-squamal hairs present (very minute and placed adjacent to calyptral base, care needed to see them). Last section of vein Cu_1 extremely short, less than half as long as $m-cu$. ♀ without proclinate orbital setae 2
- Wing with bend of vein M very abruptly angulate (usually forming a sharp angle of about 90°) and often with a short M_2 appendix (Text-figs 76-78). Abdomen not dorsoventrally flattened and armed with at least a few very strong setae. Abdominal sternites (except sometimes for St_5) concealed by ventral ends of tergites meeting in the mid line. Two supra-alar setae, a strong anterior one and a weak posterior one (sometimes only one sa in *Eutheria*). Two or three *post ia* setae. Hind tibia with or without *pv* apical seta. Scutellum with three pairs of marginal setae in most forms (fewer sometimes in *Cylindromyia* and occasional specimens of *Eutheria*). Lower calypter slightly or strongly convex on its posterior margin. Infrastomal hairs absent. Last section of Cu_1 at least half as long as $m-cu$ and usually longer than this. ♀ with proclinate orbital setae (weak or occasionally absent in *Eutheria*) 3
- 2 Wing with cell R_5 just open or closed at the wing margin, or with a very short petiole only just distinguishable (Text-fig. 74). Abdomen conspicuously elongate or clavate, with some very weakly developed marginal setae on the posterior tergites (these recumbent on T_4 and T_5 , usually somewhat erect and stubby on T_6). One *post ia* seta present. Second costal sector haired ventrally. ♀ without externally obvious ovipositor. Eyes of both sexes widely separated, interfrontal area very well developed and at least twice as wide as the antenna
- TRICHOPODINI** (p. 32)
- Wing with cell R_5 closed well before the margin and with a long petiole (Text-fig. 75). Abdomen not long and narrow, usually subovate, usually without any strong setae (vestiture almost entirely of hairs). No *post ia* setae or one (if one present this usually very weak). Second costal sector bare ventrally. ♀ with obvious projecting horny ovipositor or with large complex recurved postabdomen. Eyes of both sexes widely separated or meeting in mid line of the frons with consequent reduction of the interfrontal area **PHASIINI** (p. 33)
- 3 Palpi absent. Posteroventral declivity of the thorax forming a deep and completely sclerotized bridge widely separating the base of the abdomen from the hind coxae. Abdomen long and narrow (subcylindrical or slightly clavate) and with postabdomen exposed, large and recurved. Second costal sector haired ventrally. Hind tibia with a strong *pv* apical seta **CYLINDROMYIINI** (p. 36)
- Palpi present. Posteroventral declivity of the thorax membranous medially and forming only a narrow bridge between the abdominal base and the hind coxae. Abdomen not so shaped. Second costal sector bare ventrally. Hind tibia with or without *pv* apical seta 4
- 4 Wings colourless. Abdominal $T_1 + 2$ not excavate to its hind margin. Face without a median ridge and antennae very small (falling far short of epistomal margin). Ocellar setae reclinate. Scutellum without discal setae. Two *post ia* setae (widely spaced and anterior one subequal in size to posterior one and standing near to transverse suture) (Text-fig. 56). Apex of ♀ abdomen forcipate (Text-fig. 93). **LEUCOSTOMATINI** (p. 38)
- Wings with a bold black-brown pattern (dark colour extending along fore border and in two preapical cross-bands of which proximal one is wider than the distal one, the cross-bands evanescent posteriorly; alula unusually long and narrow and black-brown or mostly so). Face with a broad median vertical keel (sharp on its anterior edge) and antennae exceedingly long (reaching to or beyond level of epistomal margin). Ocellar setae proclinate. Scutellum nearly always with at

least one pair of clearly differentiated preapical discal setae, these semi-recumbent. Usually three *post ia* setae increasing in size from first to third, if only two present then the anterior one remote from the transverse suture. Apex of ♀ abdomen not forcipate **EUTHERINI** (p. 39)

Tribe **TRICHOPODINI**

The Trichopodini are primarily a tropical and subtropical group and are best represented in the Neotropics, but a few members of the tribe occur in the Ethiopian Region, in the south-east Asian islands, in Melanesia, and in Queensland and New South Wales. In Australia two genera occur, *Saralba* which is an endemic Australasian genus found from New South Wales to New Guinea, and *Pentatomophaga* which is an essentially Afro-Oriental element in the Australian fauna and occurs from Java to Queensland and New Caledonia. The African connection is shown clearly by the fact that *Pentatomophaga* (although here accepted as valid, pending revision of the Old World Trichopodini by a specialist on Phasiinae) is not really distinct from the African trichopodine genus *Bogosia* Rondani (cf., for example, *Pentatomophaga bicincta* de Meijere and *Bogosia minor* Villeneuve).

The chief characteristics of the Trichopodini are as follows. Head dichoptic, interfrontal area wide in both sexes, eye facets not enlarged; ♀ without proclinate orbital setae; face without a median keel; ocellar setae proclinate (often very weak); antennae moderately or very short (not nearly reaching epistome); palpi present; humeral callus with one or two setae; *ph* setae nil or one; *acr* setae usually 0 + 1; *dc* setae variable, commonly 1 + 2, sometimes more; *pra* seta present or absent (usually absent); one *sa* seta; one *post ia* seta; 0 + 1 or 1 + 1 *stpl* setae; infrasquamal hairs present (usually minute); scutellum with two pairs of marginal setae, without discal setae; wings rather long and usually narrow, not normally sexually dimorphic; second costal sector haired ventrally; basal node of R_{4+5} bare or with one or two very minute hairs; bend of vein *M* forming an open rounded obtuse curve; cell R_5 open or just closed at the wing margin or with a very short petiole (less than the length of *r-m*); wing membrane partially or wholly infusate; last section of Cu_1 very short (less than half as long as *m-cu*); lower calypter very broad posteriorly and with outer posterior corner rather produced, hind margin straight or slightly concave; legs weakly bristled, tibiae not very strongly curved, hind tibia in many New World forms armed with a long fringe of flattened black scales; hind tibia without a *pd* preapical seta and without *pv* apical seta; hind coxae rather widely separated from abdominal base, but posteroventral declivity of the thorax incompletely sclerotized (membranous or semi-membranous medially); abdomen elongate and dorsoventrally flattened in most forms, sometimes slightly clavate; $T_1 + 2$ excavate only at extreme base (virtually without any excavation); abdominal bristling very weak, sometimes no definite setae developed (vestiture all hair like); short flattened T6 visible from above in both sexes (usually armed with some short stubby setae on the posterior part); ♀ postabdomen not recurved, ovipositor very short and inconspicuous.

In both the Australian genera of Trichopodini the thoracic and leg colour is similar: the mesonotum is velvety black or brownish black with two transverse golden or golden-orange bands (one on the posterior half of the prescutum connecting the notopleura and the other on the scutum immediately before the scutellum); and the legs are yellow or orange basally (as far as the basal parts of the femora) and black on the remainder. The head form is shown for *Saralba* in Text-fig. 26.

KEY TO AUSTRALIAN GENERA OF TRICHOPODINI

- 1 Abdomen uniformly orange or yellow-orange, at most only a little darkened apically. Sides of the abdomen subparallel or very slightly convex (Text-fig. 91). Pre-alar seta absent. One *prst dc* seta. Scutum with the yellow pollinose transverse band extending on to the postalar calli and supra-alar areas **PENTATOMOPHAGA** de Meijere
- Abdomen pallid luteous yellow with a fine dark median line on the basal half and mainly dark brown or blackish on the posterior half. Shape of abdomen distinctly a little clavate, narrower on T1 + 2 and basal half of T3 than on succeeding segments (Text-fig. 90). Small *pra* seta present. At least two *prst dc* setae clearly differentiated. Scutum with the yellow pollinose transverse band more or less confined to the prescutellar area, not extending laterally on to the postalar calli and supra-alar areas **SARALBA** Walker

Tribe PHASIINI

This tribe is nearly cosmopolitan, but in contrast to the Trichopodini (to which it is undoubtedly very closely related) tends to be best represented in the temperate and subtropical parts of the world rather than in the tropics, though many truly tropical species are known. The tribe is represented in New Zealand, where three species of the so-called genus *Campbellia* Miller occur; this genus is treated as valid by Dugdale (1969), but appears to be indistinguishable from *Mormonomyia* Brauer & Bergenstamm, a subgenus of *Alophora* s.l. that is widespread in Africa and Australia.

The Australian fauna of Phasiini is comprised mainly of species (many certainly undescribed) of the genus *Alophora* R.-D. This large genus occurs in both Old and New Worlds and has been split by various authors into many so-called genera that can at best be only very poorly defined (and are found to be largely interconnected by intermediate forms if the world fauna is studied). In addition to being variously split the genus in the wide sense has often been known as *Hyalomyia* (an incorrect spelling of *Hyalomya*), and Malloch in his various papers on the Australian Tachinidae referred all of the described species of the complex to *Hyalomya*. The names *Alophora* and *Hyalomya* were proposed by Robineau-Desvoidy (1830) in the same work, and usage has been rather equally divided in the taxonomic history of the group; recent works on the Eurasian and African Phasiini have, however, mainly adopted the name *Alophora* for the genus, with the name *Hyalomya* applied to one of the constituent subgenera where named subgenera are recognized, and this course is here followed in accordance with the recent work of Draber-Moňko (1965). In her revision of the Palaearctic species Draber-Moňko (*op. cit.*) treats *Alophora* in a broad sense and recognizes seven segregates in the Palaearctic fauna as named subgenera; this approach is by far the most sensible that can be adopted in trying to deal with the difficult *Alophora* complex, and an exactly comparable approach is here adopted for dealing with the Australian fauna (which breaks into a number of moderately distinct entities taxonomically equivalent to those treated as subgenera by Draber-Moňko). At least two of the Palaearctic subgenera, viz. *Alophorella* and *Hyalomya*, can be recognized in the

Australian fauna, and two other subgenera may be represented by species here left subgenerically unplaced (these are *hippobosca* Paramonov whose characters are very close to those of the Palaearctic subgenus *Phoranthia* Rondani, and *nigrisquama* Malloch that has characters similar to those of subgenus *Brumptallophora* Dupuis). Several of the Australian species, however, do not fit any of the Palaearctic segregates, but instead are assignable to *Mormonomyia* Brauer & Bergenstamm, a subgenus of *Alophora* s.l. until now considered to be entirely African. A careful comparison of these Australian species with the African species (including the type-species of *Mormonomyia*) has shown a complete concordance in the essential characters, and it is here considered that the Australian species must be placed as consubgeneric with the African ones; the subgeneric name is therefore applicable to these Australian species. (Here it may usefully be noted that comparison of the New Zealand genus *Campbellia* Miller with *Mormonomyia*, made whilst comparing Australian and African species, has shown no differences that can be considered of any nomenclatorial consequence and the name *Campbellia* ought almost certainly to be placed in synonymy with *Alophora* (*Mormonomyia*).)

In addition to *Alophora* s.l. the Australian Phasiini includes the genera *Effitayloria* and *Besserioides*. The former occurs also in New Guinea and is closely allied to *Alophorophasia* Townsend (synonym: *Kosempomyia* Villeneuve), having the lower surfaces of the femora similarly armed with rows of short stubby spinules. *Besserioides* is entirely Australian on present evidence, but is evidently very closely allied to the monotypic Ethiopian genus *Bogosiella* Villeneuve (from which it differs by having the frons equally wide in both sexes and by having the posterior spiracles of the puparium on prolonged paired bosses).

The main external features of Phasiini are as follows. Head holoptic or dichoptic, some eye facets of both sexes enlarged in some forms; ♀ without proclinate orbital setae; face without a median keel; ocellar setae proclinate or absent; antennae usually short or very short, if moderately long (e.g. *Alophorophasia alata* Townsend) nevertheless falling well short of epistomal margin; palpi present, sometimes weak; humeral callus with 0-2 setae; *acr* setae usually 0 + 1 (hair-like); *dc* setae variable (often hair-like), commonly 1 + 2 (sometimes 3) *post dc* or only one distinct; one *sa* seta; one *post ia* seta or none; usually 1 + 1 or 0 + 1 *stpl* setae, rarely 2 + 1; *infrascapular* hairs present or absent; scutellum with one (apical) or two (basal and apical) pairs of marginal setae, rarely weak third pair, without discal setae; scutellum sometimes rather bullate and postscutellum often much produced posteriorly and then visible beyond the scutellum when seen from above; wings either of normal form or (very commonly) much produced in the anal region (especially in ♂) so that they are very broad basally and short; wings often wholly or partially infusate or yellowish or orange basally; second costal sector bare ventrally (first sector often also bare as well); basal node of R_{4+5} usually with one or two *very minute* hairs, sometimes bare; bend of *M* forming an even curve without trace of appendix; cell R_5 usually closed well before the wing margin and petiolate, occasionally just open or closed at the margin (closed and petiolate in known Australian forms); last section of Cu_1 very short, less than half as long as *m-cu* (sometimes postero-apical corner of discal cell virtually reaching the margin of the wing); lower calypter very broad posteriorly, hind margin nearly straight but outer posterior corner sometimes strongly produced; legs weakly bristled in most forms or devoid of definite setae, sometimes with a few stubby setae or combs of stubby setulae ventrally on the femora; tibiae often strongly curved or appearing so, hind tibia without scale fringes; hind tibia without *pd* preapical seta or *pv* apical seta; hind coxae close to or at least not very remote from the

abdominal base, posteroventral declivity of the thorax membranous medially or more weakly sclerotized medially than elsewhere; abdomen rounded, subovate or subconical and usually conspicuously flattened dorsoventrally; T1 + 2 excavate only at extreme base (sometimes virtually no excavation); abdominal bristling often weak or absent; ♂ hypopygium recurved under abdomen, ♀ ovipositor usually prominent and piercer-like; sternites fully exposed.

KEY TO AUSTRALIAN GENERA OF PHASIINI

- 1 Femora armed on half or more of their length with stubby black spinules on *av* and *pv* surfaces. Pteropleuron with a moderately strong isolated pteropleural seta. Vibrissae strong **EFFTAYLORIA** Malloch
- Femora without such spinules, vestiture of the ventral surface entirely hair-like. Pteropleuron haired and without a pteropleural seta (at most only one of the uppermost hairs longer and stronger than the others). Vibrissae hair-like or at most only weakly differentiated from peristomal vestiture 2
- 2 Eyes of both sexes very strongly approximated or completely meeting in the mid-line of the frons, interfrontal area obliterated medially or if distinguishable distinctly narrower at mid point than third antennal segment. Upper eye facets in both sexes sometimes much enlarged compared to lowermost facets (reaching nearly the size of an ocellus). Antennae small, third segment conspicuously less than twice as long as second segment and falling short of epistomal margin by a distance as great as its own length **ALOPHORA** Robineau-Desvoidy
- Eyes widely separated in both sexes, interfrontal area broad and at least nearly twice the width of the third antennal segment. Eye facets of both sexes of almost uniform small size. Antennae moderately large, third segment conspicuously more than twice as long as second segment and falling short of epistomal margin by much less than its own length **BESSERIOIDES** Curran

KEY TO AUSTRALIAN SUBGENERA OF *ALOPHORA*

- 1 Lower parafrontals with some fine hairing between the main frontal row of intermixed fine setae and hairs and the eye. Wing with petiole of cell *R*₅ conspicuously shorter than *m-cu* and less than twice as long as *r-m*. Mesonotum with broad black vittae contrasting with paler greyish or sometimes partly golden pollinose areas (either four separated vittae or the inner pair merged into a generally dark median area). Scutellum with two pairs of marginal setae (basals and apicals) 2
- Lower parafrontals completely bare between the main frontal row and the eye (frontal row may consist of an admixture of fine setae and long hairs standing very slightly out of line with each other but essentially forming one main row of vestiture). Wing with petiole of cell *R*₅ very long, at least as long as *m-cu* and more than twice as long as *r-m* (except in *A. hippobosca*). Mesonotum rather uniformly black and shining, or if partially paler pollinose then not distinctly vittate. Scutellum with either one (basal) pair of setae or with two pairs 3
- 2 Epistome distinctly projecting, curving forwards from the facial region and the facial profile therefore distinctly concave . . . subgenus **ALOPHORELLA** Townsend
- Epistome not at all projecting, in the same straight plane as the face when seen in profile (fig. 3 in Malloch, 1929a) . . . **Alophora nigrisquama** (subgenus uncertain)
- 3 Scutellum with two pairs of marginal setae (basals and apicals), and with uniform fine semi-recumbent hairing on the whole upper surface. Postscutellum evenly rounded and not, or only just, visible when fly viewed from directly above (Text-fig. 66). ♂ thorax entirely without flattened lanceolate or scale-like hairs or setae. Scutellum concolorous dark brown or black when seen from any angle,

- slightly or strongly shining. Sublunular bulla flattened and greyish pollinose or shining on upper part adjacent to lunula. Epistome weakly or moderately prominent 4
- Scutellum with basal setae and without apical setae (or if a very weak pair of setae present simulating apicals then these situated in a preapical position on disc of the scutellum) (Text-fig. 64); scutellar hairing confined to basal half or two thirds of scutellar disc, usually the hindmost hairing rather erect and stronger than remainder of hairing. Postscutellum very prominent, often narrowed, produced backwards and flattened (sometimes medially slightly sulcate), always partly visible when fly seen directly from above (Text-fig. 64). ♂ with some of the hairing (sometimes also the setae) of the mesopleuron flattened and lanceolate or broadly scale-like, similar flattened vestiture or scales often present also on humeral callus or notopleuron [also on wing-bases and femora in some African species]. Scutellum with posterior part ashy grey or brownish grey (conspicuously contrasting with dark brown or black basal discal part when viewed from behind). Sublunular bulla rounded or knob-like and brilliantly shining. Epistome enormously prominent and the face seen in profile very deeply concave (Text-fig. 28) subgenus **MORMONOMYIA** Brauer & Bergenstamm
- 4 Scutellar dorsum evenly convex. Wing with petiole of cell R_5 at least as long as *m-cu*. Wings of both sexes clear hyaline. Claws of ♂ about equal in length to last tarsal segment subgenus **HYALOMYIA** Robineau-Desvoidy
- Scutellum distinctly flattened on posterior half and with a rather sharp thin hind margin. Wing with petiole of cell R_5 conspicuously shorter than *m-cu*. Wings of ♂ dark brown anterobasally. Claws of ♂ enormous, obviously longer than last tarsal segment **Alophora hippobosca** (subgenus uncertain)

Tribe CYLINDROMYIINI

This almost world-wide group comprises some very distinctive tachinids in which, typically, the abdomen is very elongate and subcylindrical and in which palpi are often lacking (as in all the Australian members); in addition to these obvious features the tribe in the strict sense is characterized by having the coxae of the hind legs widely separated from the base of the abdomen by a completely closed and strongly sclerotized posteroventral declivity to the thorax (normally in Tachinidae the median part of this declivity is membranous). The limits of the tribe are not completely clear at present as it is uncertain whether a number of intermediate forms should be considered as contribal with *Cylindromyia* Meigen or not. These intermediate forms include, for example, the Oriental genus *Curtocera* Macquart and *Huttonobesseria* Curran from New Zealand in which the posteroventral thoracic declivity is closed as in *Cylindromyia* but in which there are strongly developed palpi; such forms interconnect *Cylindromyia* and its immediate allies with *Hermya* Robineau-Desvoidy, *Clara* Brauer & Bergenstamm, and like genera in which there is a cylindromyiine body facies but in which the posteroventral thoracic declivity is membranous medially (forming an 'open' bridge) and fully developed palpi occur. It is not germane to consider the limits of the Cylindromyiini on a world basis at present, but the following characteristics are noted as occurring in all the Australian members and *most* of the extra-Australian members of the Cylindromyiini sensu stricto (i.e. *exclusive* of forms with 'open' posteroventral thoracic declivity and *exclusive* of forms possessing palpi).

Head dichoptic, eyes widely separated in both sexes, eye facets not enlarged; ♀ with two pairs of strong proclinate orbital setae; face without a median keel or very weakly raised medially [a definite sharp keel occurs in the Neotropical genus *Polistiopsis* Townsend]; ocellar setae proclinate; antennae of varied length (much shorter than face in Australian forms, very long and reaching epistome in some forms from elsewhere); palpi absent; humeral callus with 2-4 setae; *acr* setae variable number, likewise *dc* setae; two *sa* setae; two widely separated *post ia* setae (of which the anterior one is enormously strong and stands immediately behind the *presutural seta* just mesad of the pre-alar seta [a very unusual chaetotactic feature in Tachinidae]) (Text-fig. 58); *pra* seta weak or moderately strong; one, two or three *stpl* setae; infrasquamal hairs absent; scutellum with one, two or three (most often three) pairs of strong marginal setae; wings elongate, often partially or wholly coloured; second costal sector haired ventrally; basal node of R_{4+5} with some minute hairs; bend of *M* forming an abrupt angle, often with M_2 appendix; cell R_5 usually closed and petiolate (Text-fig. 76) [so in all Australian forms], sometimes open to wing margin; last section of Cu_1 usually at least half as long as, sometimes subequal to, *m-cu*; lower calypter evenly rounded on its hind margin; legs moderately strongly bristled, without any scale fringes; hind tibia without *pd* preapical seta (only with *ad* and *d* preapicals) and with a *pv* apical seta; hind coxae widely separated from abdominal base, the posteroventral declivity of the thorax forming a deep completely sclerotized bridge; abdomen very elongate, subcylindrical (Text-fig. 92) or subclavate (in some forms appearing 'waisted' in the manner of Vespoidea), with the postabdomen recurved; $T_1 + 2$ slightly excavate only at extreme base; abdomen with some strong setae; sternites concealed (except for most of St_5).

All but one species of Australian *Cylindromyiini* belong to the genus *Cylindromyia*, and the majority exactly resemble some of the common species of *Cylindromyia* found in the temperate latitudes of the northern hemisphere (in fact so close is the resemblance that if the Australian provenance were unknown it would be assumed that specimens were either European or North American); these species have the basal abdominal segments tawny orange or light red (usually with a dark mid line) and the apical segments black. The single Australian *cylindromyiini* species that is not a *Cylindromyia* was described by Bigot under the name *Ocyptera tristis* and is still known only from the holotype; it is undoubtedly congeneric with *Gerocyptera marginalis* (Walker) from Amboina (=Ambon), type-species of *Gerocyptera*, and is therefore here assigned to the genus *Gerocyptera*. (It is worth noting that the type-locality of *tristis* is known only as 'Australia', but as Bigot was sometimes at fault in his recorded provenances there is an element of doubt whether *tristis* is truly Australian, which will only be resolved by future collecting: the genus *Gerocyptera* occurs from the Moluccas to New Hebrides through New Guinea, and if *tristis* is indeed Australian then it probably occurs only in north Queensland.) The head profile of *G. tristis* is shown in Text-fig. 25.

Some species of *Gerocyptera* resemble wasps of the superfamily Vespoidea and the genus is extremely closely allied to the Neotropical genera *Clinogaster* Wulp and *Polistiopsis* Townsend in which the resemblance to vespoid wasps is even more perfect. (All this complex is very rare in collections and nothing is known of the host relations.)

KEY TO AUSTRALIAN GENERA OF CYLINDROMYIINI

- 1 Lower calypter with very fine long marginal hairs in addition to the normal *very* short fringe. Basal node of vein R_{4+5} on the *ventral* surface of the wing with a

tuft of very long strong hairs (most of these greatly exceeding the length of $r-m$). Base of costa with exceedingly long hair (obviously much longer than the normal wing fringing) extending from just distad of the basicosta for most of the way to Sc, but especially strong immediately beyond the basicosta

GEROCYPTERA Townsend

- Lower calypter with only the usual *very* short marginal fringe. Basal node of R_{4+5} ventrally with only a few small hairs or fine setulae, these not exceeding $r-m$ in length. Base of the costa without such exceptionally produced vestiture

CYLINDROMYIA Meigen

Tribe LEUCOSTOMATINI

The small tribe Leucostomatini occurs mainly in Eurasia and North America, but a few species of *Leucostoma* are found in the Neotropical Region and in the Ethiopian Region (principally in South Africa, but isolated specimens are known from Sierra Leone and southern Arabia). In Australia the existence of the tribe was known for a long time only from a single specimen collected at Sydney (in the ANIC, Canberra collection) and identified by Malloch (1930b) as *Leucostoma simplex* (Fallén) but other specimens of this species (or an extremely closely allied one in the same genus) have recently been obtained in New South Wales, confirming that *Leucostoma* occurs naturally in Australia. (The specimen named by Malloch as *L. simplex* was examined during the present work and directly compared with Fallén's type and other European material: it appears to be correctly identified as this Holarctic species.)

Townsend's (1936, 1938) conception of the tribe included a strangely heterogeneous assemblage of forms, and he even included the Australian genera *Zita* Curran and *Pygidia* Malloch in his Leucostomatini. Whilst admitting that these genera are hard to place reliably, it is hard to conceive of them as having any relationship with *Leucostoma*. As now understood the tribe is a very homogeneous group including forms that are all superficially very similar to *Leucostoma* in which the end of the female abdomen is forcipate, and in which all the members have hemipterous hosts. The genus *Leucostoma* is easily distinguished from the other genera by the long-petiolate wing cell R_5 (a similarly petiolate R_5 occurs in the Mexican genus *Vanderwulpella* Townsend, but the female sex is unknown in this genus and the current assignment of *Vanderwulpella* to the Leucostomatini is probably in error).

A noteworthy feature found in the Leucostomatini is the great development of the lower calyptrae in the males of some forms. In the Oriental genus *Calyptromyia* Villeneuve these are exceptionally large (to which feature the generic name alludes) and dull opaque white, and in males of an undescribed leucostomatine from Madagascar they are so enormous that they completely conceal the abdomen; in this undescribed species the lower calyptrae are (relative to body size) without doubt the largest known in the Diptera, and, being brilliant opaque white contrasting with the shining black head and thorax, give the fly a most spectacular appearance.

The chief characteristics of the Leucostomatini are as follows. Head dichoptic but frons strongly contracted dorsally in ♂, eye facets not enlarged; ♀ with two pairs of proclinate orbital setae (or upper pair divaricate), usually with a pair of outwardly directed prevertical

setae also; face without a median keel (at most only faintly raised on upper part); ocellar setae reclinate or divaricate in most forms (sometimes ocellar setae almost hair-like and then proclinate); antennae falling short of epistome; palpi present; humeral setae varied, usually at least two (rarely one one differentiated); *acr* setae absent or 0 + 1 or 1 + 1; *dc* setae 2 + 3 or 3 + 3; two *sa* setae (hind one sometimes very small); two *post ia* setae (very strong and subequal in size, anterior one nearer to transverse suture than to the posterior one); *pra* seta very small (rarely undifferentiated); from 1-3 *stpl* setae (aberrantly 4); infrascapular hairs absent (rarely one or two very minute hairs); scutellum with three or four pairs of marginal setae and without discal setae (normally three marginal pairs, but additional weak fourth pair present outside the apicals in *Calyptromyia* and *Clairvillia* Robineau-Desvoidy); wings, normal, clear hyaline; second costal sector bare or haired below; basal node of R_{4+5} with one hair or strong setula (this feature very constant but a second supernumerary hair may occur in *Calyptromyia*); bend of *M* varied, abrupt or evenly curved, sometimes with M_2 appendix; cell R_5 open, closed at wing margin, or long-petiolate; lower calyptrae rounded, sometimes slightly to enormously enlarged in ♂, often rather opaque white; last section of Cu_1 at least two-thirds as long as *m-cu*; legs with strong setae, always without scale fringes; hind tibia usually with three strong dorsal preapical setae (i.e. *pd* preapical present in addition to *ad* and *d*), but *pd* preapical occasionally very weak or absent; hind tibia without *pv* apical seta (except in *Brullaea* Robineau-Desvoidy); hind coxa and abdominal base approximated, posteroventral declivity of the thorax membranous medially; abdomen elongate-subovate, not flattened above, apex not recurved; $T1 + 2$ excavate only at base; abdomen with strong setae; sternites concealed; end of ♀ abdomen with a pair of horizontal forceps-like processes (Text-fig. 93).

Leucostoma, the only genus known in Australia, can be recognized by the accompanying key to phasiine tribes. The Oriental genus *Calyptromyia* might just possibly occur in northern Australia though not yet found: it is distinguished from *Leucostoma* by having the parafacials completely haired, four pairs of scutellar setae, and cell R_5 open at the wing margin (instead of bare parafacials, three pairs of scutellar setae and long-petiolate R_5 , as found in *Leucostoma*).

Tribe EUTHERINI

This tribe is currently considered to be composed of the single genus *Euthera* Loew. This very distinctive genus comprises a few species from each major zoogeographical region and an undescribed species from New Caledonia. The tribe is very little known as most of the species are rather rare (or at least poorly represented in museum collections). For many years the hosts remained unknown, but it is now established that *Euthera* parasitizes adult Pentatomidae (Hemiptera), a fact which confirms that the tribe is rightly placed in the Phasiinae. Before the host relations were established the correct position of the genus was rather uncertain and van Emden (1960 : 378, 382) put *Euthera* into the Minthoini because of a resemblance to minthoines in the flattened tarsi.

Euthera was split by Townsend, who treated the Eutherini as composed of four genera (Townsend, 1936, 1938) each confined to a different zoogeographical region (*Euthera* proper in North America, *Eutheropsis* Townsend in the Palaearctic, *Preuthera* Townsend in Africa and *Macreuthera* Bezzi in Australia, the last of these originally proposed by Bezzi as a subgenus of *Euthera*). Separate generic

status for these entities is no longer recognized, and certainly cannot be justified in view of the overall homogeneity shown by eutherine species; even Townsend seems to have thought that his penchant for splitting had been carried rather far, as he commented (Townsend, 1938 : 212) that it 'comes near conforming to the proverbial genus for every species'.

In Australia the *Euthera* fauna contains two described species, but it is likely that others exist, as Paramonov (1953) surmises. Paramonov (*op. cit.*) has noted how newly discovered species cut across the character differences that were previously supposed to define subgenera (or genera) within the *Euthera* complex, and has emphasized the need to refrain from any further description of subdivisions within *Euthera*. This is a particularly appropriate plea, as it is obvious from a study of undescribed species in museum collections that there is a more or less complete intergradation of characters between the species of different regions and that it is therefore impossible to maintain any valid subgenera or genera within the complex. Van Emden (1960) took a similar view when he discussed *Euthera* in the Ethiopian Region and formally established the synonymy of *Preuthera* with *Euthera*.

The principal characteristics of *Euthera* and Eutherini are as follows. Head dichoptic, eyes well separated in both sexes but frons a little contracted above in ♂; ♀ usually with proclinate orbital setae, these sometimes weakly differentiated or absent; ♀ with or without a pair of small outwardly directed prevertical setae; face with a large vertical median keel or with a large bulbous swelling, the carination formed into a definite sharp edge medially (Text-fig. 24); ocellar setae usually weak, proclinate or divaricate; antennae extremely long, reaching to epistomal margin or beyond, inserted high on head; palpi present; two main humeral setae, sometimes weak third, or third and fourth; *acr* setae varied, from 2 + 1 to 3 + 4; *dc* setae varied, usually at least 3 + 3, sometimes 4 *prst dc* or 4 or 5 *post dc*; *pra* seta present, small; normally three *post ia* setae, if only two then standing near to each other and remote from transverse suture; two *sa* setae (hind one sometimes very weak or undifferentiated); two *stpl* setae (1 + 1); infrasquamal hairs absent; scutellum usually with three pairs of marginal setae, but apical pair often very weak (crossed, divergent or parallel), apicals sometimes entirely absent, discal scutellars normally present (at least one pair); wings boldly patterned with black-brown colour (this extending along fore border and in two preapical cross-bands which are evanescent posteriorly and of which the proximal one is much broader than the distal one), alula unusually long and mainly black-brown; second costal sector bare below; basal node of R_{4+5} bare (except in an undescribed Melanesian species in which three or four minute hairs present); bend of *M* very abrupt, usually forming a right-angle or even an acute angle, rarely with short M_2 appendix; cell R_5 long-petiolate; lower calypter rounded posteriorly; last section of Cu_1 from half to two-thirds as long as *m-cu*; legs with strong setae and without scale fringes; hind tibia with two or three dorsal preapical setae, with or without *pv* apical seta; hind coxa and abdominal base approximated, posteroventral declivity of the thorax membranous medially; abdomen elongate-subovate, strongly convex dorsally, apex not recurved; $T_1 + 2$ with excavation reaching to its hind margin; abdomen with strong setae; sternites concealed; no specialized ovipositor.

The most useful spot characters for the genus are provided by the combination of variegated black-brown and hyaline wing pattern, strong median facial keel, exceedingly long narrow antennae, and very long-petiolate wing cell R_5 (Text-figs 24 and 77).

It may be noted that Herting (1966 : 8) implies that the curious European genus *Redtenbacheria* Schiner should be placed in the Eutherini. Such a placement

is insufficiently substantiated at present and the diagnosis of Eutherini given above omits *Redtenbacheria* from consideration.

SUBFAMILY PROSENIINAE (DEXIINAE) WITH KEYS TO THE
TRIBES AND GENERA

The subfamily name Proseninae is here used in order to conform with the recently published catalogues of the Tachinidae of North and South America, although it is now known that it is not the oldest available name that applies to the group; several family-group names based on included genera pre-date the use of Prosenini (-ae) and one of these ought strictly to be used for the subfamily under the priority requirements of the *International Code of Zoological Nomenclature*. It is not yet clear which name should stand valid, and most specialists are in favour of returning to the name Dexiinae (that used to be almost universally applied to the subfamily). The name Dexiinae cannot, however, be validly applied to the subfamily until the type-species of *Dexia* Meigen is changed by a ruling of the International Commission on Zoological Nomenclature; such a ruling has not yet been applied for, although it is under active consideration by interested specialists.

The subfamily is very large and cosmopolitan and its members appear exclusively to parasitize beetles. There are very few host records for the rich Australian fauna, but it is a reasonable guess on present evidence that all will be found to have coleopterous hosts. Several tribes have been delimited within the subfamily by various authors, notably Townsend, but taken as a whole the multiplicity of forms tends to merge together with few if any breaks in the characters that permit satisfactory tribal definitions. Even between the Rutiliini and the rest of the Proseninae (which are conventionally treated as tribally distinct) there are few concrete characters that absolutely serve for reliable tribal discrimination (Crosskey, 1973) of all the forms into one tribe or the other; the genus *Chetogaster* Macquart could, for example, be equally well placed in either the Prosenini or the Rutiliini (in the present work it is retained therefore in its traditional position in the latter tribe).

As with other tachinid subfamilies it is difficult to formulate a fully satisfactory subfamilial definition but the main characteristics of most members of the group are as follows. Head often with a very strong facial carina separating the antennae or with a sharp median ridge (though carina lacking in very many forms); rows of frontal setae descending to the level of the lunula or the first antennal segment; ♂ without reclinate orbital setae; ♂ head often with eyes very strongly approximated but not holoptic (except in a few *Formosia* species); uppermost eye facets normally not enlarged (only enlarged in some *Formosia*); eyes bare [this is true of almost the entire vast complex of world forms included in the Proseninae, but there are a very few exceptions that have haired eyes: examples, *Callotroxis* Aldrich and *Tyreomma* Brauer and Bergenstamm from South America]; inner vertical setae when present often convergent or crossing; prosternum bare (except in a few Rutiliini); prosternal membrane bare (except in some Rutiliini); humeral callus with at least two setae distinguishable (though these may be very weak in Rutiliini); *post ia* setae varied, from none to four; dorsocentral setae varied, often very reduced in Rutiliini, pre-alar seta weak or absent; two or more differentiated *sa* setae in almost all forms; postalar callus with 2-7 setae; usually two or three sternopleural setae (one or none in some Rutiliini); infrascapular hairs nearly always

absent (present at least in some species of *Chetogaster*); scutellum typically with three pairs of strong marginal setae (Text-fig. 70) (including crossed or convergent apicals) but most Rutiliini with more pairs of marginals (4-11) and apicals often reduced; mid tibia with a *v* submedian seta; hind tibia with or without *pv* apical seta; suprasquamal ridge often haired (Rutiliini); abdominal T1 + 2 usually excavate to its hind margin (not in Doleschallini); abdominal sternites concealed by ventral ends of tergites meeting in mid line, at most only slightly exposed and tergite venters slightly parted; ♂ aedeagus long and slender and armed with a backwardly directed spinus (epiphallus) at junctions of the basiphallus and distiphallus (Text-fig. 22).

The curious small tribe Doleschallini, which occurs in the Oriental Region eastwards to New Guinea and the Solomon Islands, has not been found in Australia. It seems just possible, however, that it might be represented in northern Queensland, and the tribe is therefore included in the following key to tribes. The Doleschallini includes the most slender elongate forms found in the Tachinidae and the adults are noteworthy for their habit of resting motionless (and well disguised) on the trunks of trees (especially coconut and, in New Guinea, *Casuarina*) with their exceedingly long spindly legs outstretched.

KEY TO AUSTRALIAN TRIBES OF PROSENINAE

[Note: Doleschallini is included although the tribe is not yet known from Australia.]

- 1 Abdominal T1 + 2 excavate to its hind margin. Thorax membranous medially or mainly so between bases of hind coxae and abdominal insertion, coxae and abdomen not unusually remote from each other. Head in profile not strongly subtriangular, as long at the epistome (or nearly as long) as at the level of the antennal axis. Head often with a strong facial carina. Notopleuron distinctly differentiated from the scutum by a groove or shallow depression. Body form usually robust, but if long and slender then abdomen broadest near base or subfusiform. 2
- Abdominal T1 + 2 excavate only at the base. Thorax closed above the hind coxae by a broad sclerotized bridge (as in *Cylindromyiini*), the hind coxae widely separated from the abdominal base. Head in profile subtriangular, profrons extraordinarily prominent and lower part of head strongly receding, head *very* much longer at antennal axis than at level of the epistome. Head without facial carina. Notopleuron not differentiated from the scutum by any depression. Body and legs excessively long and slender, the abdomen with subparallel sides (i.e. not distinctly fusiform or widest at base) **DOLESCHALLINI**
- 2 Postalar callus with only the normal two postalar setae (at most only a weak setula in addition). Suprasquamal ridge and postalar wall bare. Epistome not produced in front of vibrissal insertions (Text-figs 29-30) or only slightly so (Text-fig. 27), usually not much visible in profile. Propleuron bare or haired. Barete bare or sparsely haired anteriorly (if all haired then no facial carina). Facial carina present or absent. Scutellum with three pairs of marginal setae (some supernumerary marginals differentiated in *Rutilotrix*). Male hypopygium without long strong erect setae on T7 + 8 (except in *Acucera*). Prosternal membrane and prosternum totally bare **PROSENINI** (p. 43)
- Postalar callus with supernumerary strong setae, with a total of 3-6 setae (except in *Chetogaster*). Either suprasquamal ridge or postalar wall usually haired. Epistome subnasute or at least slightly and distinctly projecting in front of the vibrissal insertions in profile (Text-fig. 31). Propleuron haired. Barete thickly

haired along its length (except in *Chetogaster* in which hind part bare). Head always with a strong facial carina. Scutellum with four or more pairs of marginal setae (except in *Chetogaster* with three). Male hypopygium with long strong erect setae on T7 + 8 (usually standing in line on each side of the tergite). Prosternal membrane bare or haired, prosternum bare except in some forms with haired prosternal membrane **RUTILIINI** (p. 47)

Tribe PROSENINI

This tribe contains the great bulk of members of the subfamily Proseninae when the whole world fauna is considered, but in Australia (even allowing that there are doubtless many undescribed forms) forms only a minor proportion of the total prosenine fauna – most of the Australian fauna being comprised by the Rutiliini. The features that differentiate the Prosenini from the Rutiliini are shown in the foregoing key to tribes, and the characteristics of the Prosenini need not be detailed here (further information is, however, given in Crosskey, 1973). The Australian Prosenini fall into two main groups, one containing forms with a heavy broad facial carina that fully separates the antennae and with reduced palpi, and another group (somewhat diverse in its components) containing forms without a facial carina, or with a sharp median facial ridge, and with fully developed palpi.

The first of these groups contains the widespread Old World genus *Prosenia* in which the proboscis is enormously elongate and slender, and a complex of forms closely related to *Prosenia* in which the proboscis is much shorter and stiffer. Several genera have been proposed among the latter forms (*Senostoma*, *Rhynchiodexia*, *Austrodexia*, *Macropodexia*, *Lasiocalypter*, *Lasiocalytrina*) but these merge so imperceptibly into one another – with few character breaks that are maintained when sufficient material is examined of the complex – that it is impossible to recognize most of them as valid genera. The oldest name applying to the complex of forms with short proboscis, strong facial carina, and reduced palpi is *Senostoma* Macquart (a name misused for many years and erroneously applied to various rutiliines) and all the other names, except *Macropodexia*, are here placed as synonyms of *Senostoma*; the broad genus so recognized can be identified by the accompanying key to genera. The genus *Macropodexia* is superficially hardly distinguishable from many of the species of *Senostoma*, but it has the propleuron thickly pale haired and so differs from all *Senostoma* s.l. and from *Prosenia*; probably *Macropodexia* ought also to be placed as a synonym of *Senostoma* and the definition of the genus widened, but it is here preferred to retain *Macropodexia* as valid until the whole complex can be studied in more detail by an Australian worker with more material to hand. It is of interest to note that the propleural hair is white in *Macropodexia* whereas it is black in all other known Australian Prosenini with haired propleuron.

The second group contains a number of endemic Australian genera that differ from the first group (*Prosenia*, *Senostoma* complex) in having fully developed palpi and in the conformation of the facial region of the head (either lacking a facial carina or having a sharp ridge-like keel). The forms in this second group are rather diversified. Most of them form an apparently natural complex in which the

propleuron is black haired and in which there is no facial keel, the genera *Geraldia*, *Acucera*, *Platytainia*, *Hobartia* and *Anatropomyia* coming in this category; the first three of these genera have the parafacials covered with strong black hair. This complex seems to be uniquely Australian and has no counterpart in the fauna of the Oriental Region, but some members closely resemble certain Neotropical forms: *Anatropomyia*, for example, has the same essential characters and very closely resembles '*Theresia*' *erecta* Aldrich from southern Chile (the generic name for this species is placed in inverted commas because the species undoubtedly is wrongly placed in *Theresia* Robineau-Desvoidy but has not yet been reassigned).

Two genera here placed in the Prosenini were recently placed by Paramonov (1968) in the Rutiliini, viz. *Ola* and *Ruya* (= *Rutilotrix*). These genera (which are so similar to each other that separate generic status is only doubtfully warranted) have a sharp median facial keel (unlike the carina of Rutiliini or of the *Prosenia* group of genera) and an aggregate of characters that better places them in the Prosenini rather than the Rutiliini, though they are to some extent intermediate. The affinities of *Ola* and *Rutilotrix* are uncertain, but they closely resemble some similarly robust Prosenini from the southern Neotropical Region, especially *Psecacera* Bigot.

The genus *Trichostylum* is disjunct from the rest of the Australian Prosenini. Its overall facies leaves no doubt at a glance that it belongs in the *Billaea* Robineau-Desvoidy complex of genera (or so-called genera) that are a significant component of the prosenine fauna of Africa and Eurasia. The holotype of the type-species has the propleura totally bare (in contrast to the haired propleuron of *Billaea* s.l., *Philotrichostylum* Townsend, etc.) and the genus is on this account retained as valid at present, but apart from the bare propleuron it is scarcely distinguishable from certain species of *Billaea* s.l. that lack a facial carina.

The genus *Heterometopia* Macquart is uniquely Australian and may not truly belong in the Prosenini (where it is here placed as an interim measure) until its characters can be more fully studied and its hosts discovered). It is an aberrant genus in respect of its head structure and especially difficult to place at present. If not a prosenine then it ought probably to be placed in the Tachininae either in the tribe Thelairini or in the tribe Leskiini. A study of the male genitalia would probably help in determining its position.

KEY TO AUSTRALIAN GENERA OF PROSENIINI

- 1 Head with a large elongate facial carina separating the antennae, the carina convex or flattened on its anterior surface (never forming a sharp ridge) and when seen in profile appearing abruptly marked off from the epistome by a strong concavity (Text-fig. 27). Palpi very reduced, shorter than or at most only as long as the third antennal segment. Two sternopleural setae (except in *Prosenina* with three). Arista plumose. [Mainly slender forms in which males have exceptionally spindly legs with attenuate, often sinuous, tibiae] .
- Head without a facial carina or with a rather sharp roof-like median ridge that does not clearly separate the antennae and when seen in profile is not marked off from the epistome by a definite concavity. Palpi well developed, obviously

- longer than the third antennal segment. Two or three sternopleural setae. Arista micropubescent to short-plumose. [Mainly moderately or very robust forms with legs not markedly attenuate] 5
- 2 Three sternopleural setae (2 + 1). Second costal sector haired below. Wing with cell R_5 closed well before the margin and distinctly petiolate (Text-fig. 79). Proboscis very long and slender, length exceeding the height of the head (as in *Prosenia*). Costal spine very strong, at least twice as long as cross-vein $r-m$
- PROSENA** Malloch
- Two sternopleural setae (1 + 1). Second costal sector bare below. Wing with cell R_5 open at the margin (Text-fig. 80) (except in *Senostoma notatum*), sometimes narrowly. Proboscis long or short. Costal spine not very strong or undeveloped, not longer at most than $r-m$ 3
- 3 Propleuron haired **MACROPODEXIA** Townsend
- [Apart from the haired propleuron this genus does not differ from *Senostoma*. The validity of the genus is therefore very doubtful]
- Propleuron bare 4
- 4 Proboscis short and straight, rather stiff, length conspicuously less than height of the head and usually not greater than length of the head at the epistome. Usually two *post ia* setae (sometimes three, rarely only one). Abdomen with or without discal setae. Outer part of lower calypter sometimes with long hair on the upper surface **SENOTOMA** Macquart
- Proboscis very long and slender, slightly flexible and sinuous, length conspicuously greater than height of head. Usually one *post ia* seta (occasionally two, but in this case anterior one usually very weak). Abdomen always without discal setae on any tergite. Lower calypter always completely bare on its upper surface **PROSENA** Le Peletier & Serville
- 5 Face with a conspicuous roof-like ridge on almost its entire height. Arista bare or virtually so. Four or more *post dc* setae, usually four *prst dc* setae. Scutellum with at least four distinct discal setae (in addition to the marginal setae). Intermediate tergites (T3 and T4) with median discal setae, those on T3 sharply distinguished from the very short fine recumbent hairing on either side. Abdominal T5 with strong subequal setae haphazardly arranged over most of its upper surface. [Large and robust forms with length range 11–19 mm] 6
- Face without a conspicuous ridge on its whole height, at most with a trace of a weak ridge or median swelling on the upper part immediately below the antennal bases. Arista pubescent or plumose (pubescence sometimes very short and inconspicuous). Three or four *post dc* setae, nearly always three *prst dc* setae. Scutellum usually without or with two discal setae, occasional specimen with four setae differentiated. Intermediate tergites with or without discal setae. Abdominal T5 with strong setae usually confined to the apical row, if discal setae present then these few and tending to form a transverse discal row. [Length usually less than 11 mm (holotype of *Trichostylum rufipalpe* measuring just about 11 mm)] 7
- 6 Propleuron haired. Scutellar margin with several clearly differentiated marginal setae in addition to the normal three pairs **RUTILOTRIXA** Townsend
- Propleuron bare. Scutellar margin usually without marginal setae supernumerary to the normal three pairs **OLA** Paramonov
- [The total facies of this genus is so similar to that of *Rutilotrixa* that it is questionable whether separate generic status is justified, despite the bare propleuron. Head profile as in Text-fig. 29]
- 7 Propleuron haired. Second costal sector bare below. Parafacials bare or haired. Two or three sternopleural setae 8
- Propleuron bare. Second costal sector haired below. Parafacials bare. Three sternopleural setae 13

- 8 Wing with cell R_5 closed well before the margin and conspicuously petiolate (the petiole longer than $r-m$). Parafacials strongly haired. Three *stpl* setae
GERALDIA Malloch
- Wing with cell R_5 open to the wing margin. Parafacials bare or haired. Two or three *stpl* setae 9
- 9 Parafacials *either* totally bare or fully haired. Arista pubescent or (in *Anatropomyia*) short-plumose. Two or three *stpl* setae. ♀ palpi at most only slightly spatulate 10
- Parafacials strongly haired on the upper half and with two or three minute hairs at the ventral end adjacent to the eye, entirely bare medially. Arista long-plumose. Three *stpl* setae. ♀ with extraordinarily large dorsoventrally spatulate palpi (coloured bright orange and conspicuously contrasting with blackish head and body). [Moderately large form, length about 10 mm, with abdomen slightly shining blue-black or violaceous beneath the thin whitish pollinosity] [Western Australia] Undetermined gen.
 [One female specimen from Western Australia seen in BMNH]
- 10 Parafacials strongly haired 11
- Parafacials bare 12
- 11 Three *stpl* setae. 3 + 3 *dc* setae. Third antennal segment distinctly pointed on its outer apex. Bend of vein M further from the wing margin than from $m-cu$. Humeral callus with several strong setae differentiated (usually 5–7). Palpi of ♀ distinctly spatulate apically **ACUCERA** Malloch
- Two sternopleural setae. 3 + 4 *dc* setae. Third antennal segment evenly rounded apically. Bend of vein M nearer to the wing margin than to $m-cu$. Humeral callus with only two strong setae clearly differentiated (only at most one or two weak hair-like setae in addition). Palpi of ♀ evenly slender. Head profile as in Text-fig. 30 **PLATYTAINIA** Macquart
- 12 Three sternopleural setae. Arista short-plumose. Epistome distinctly projecting in front of the vibrissal insertions when seen in profile, vibrissae inserted above the level of the epistomal margin. First antennal segment not noticeably projecting. Antennae largely bright orange **ANATROPOMYIA** Malloch
- Two sternopleural setae. Arista pubescent. Epistome not projecting when seen in profile, vibrissae inserted about level with the epistomal margin. First antennal segment prominently projecting. Humeral callus with three or four setae standing more or less in line. Antennae not so coloured . **HOBARTIA** Malloch
- 13 Interfrontal area well developed, wider than a parafrontal in both sexes. Frons narrower in ♂ than ♀. Arista with very long plumosity (longest hairs exceeding the width of the third antennal segment). Hind tibia without *pd* preapical seta. Wing vein R_1 bare. ♂ without reclinate orbital setae
TRICHOSTYLUM Macquart
- [This genus has very much the habitus of *Billaea* Robineau-Desvoidy s.l. but has the propleuron bare. It differs from *Philotrichostylum* Townsend by the same character, but is otherwise exceedingly similar to this genus]
- Interfrontal area very reduced or completely obliterated, in ♀ obviously narrower than a parafrontal and in ♂ eliminated by the fusion of the broad parafrontals in the mid line of the frons. Frons as wide in ♂ as in ♀, much wider than an eye in dorsal view. Arista with long pubescence or short plumosity (longest hairs much shorter than width of antenna). Hind tibia with a *pd* preapical seta (in addition to the normal *ad* and *d* preapicals), though this sometimes very small. Wing with vein R_1 bare or setulose. ♂ without or with one pair of reclinate orbital setae (in latter case these standing very isolated near upper outer corners of the wide frontal region) **HETEROMETOPIA** Macquart
- [This genus, although running out in the same couplet as *Trichostylum* above, certainly has little or no relationship with *Trichostylum* and may not belong in the Prosenini]

Tribe **RUTILIINI**

This tribe occurs only in the Oriental and Australasian Regions, and forms a dominant element in the tachinid fauna of Australia. A revisionary classification of the tribe has just been published (Crosskey, 1973) and no further discussion is needed here.

KEY TO AUSTRALIAN GENERA OF RUTILIINI

- 1 Suprasquamal ridge bare. Prosternal membrane bare 2
- Suprasquamal ridge haired. Prosternal membrane bare or haired 5
- 2 Palpi minute, not longer than basal width of mentum and not longer than third antennal segment. Buccal opening very long and narrow, at narrowest point not wider than facial carina. Arista conspicuously short-plumose. Upper calypter enlarged, when wings folded usually as long as lower calypter
PRODIAPHANIA Townsend
- Palpi well developed, very much longer than either the basal width of mentum or the third antennal segment. Buccal opening wide, much broader than facial carina. Arista pubescent (occasionally with very short plumosity). Upper calypter normal 3
- 3 Postalar callus with two strong setae (sometimes with one very much shorter and weaker setula differentiated from hair in addition). Epistome subnasute, facial profile deeply excavate between epistome and carina. Palpi sexually dimorphic, distinctly clubbed or spatulate in ♀ and slender in ♂. Infrsquamal hairs sometimes present. Scutellum normally with only three pairs of marginal setae (at most with four, apicals included) **CHETOASTER** Macquart
- Postalar callus with three or more strong setae. Epistome not very strongly prominent, facial profile usually only slightly concave between epistome and carina. Palpi not sexually dimorphic, long and slender in both sexes (at most only a trace of swelling at extreme tips). Infrsquamal hairs absent. Scutellum normally with 4-11 pairs of marginal setae (including apical pair), very rare specimens with only three pairs 4
- 4 Apical scutellar setae inserted at a conspicuously lower level than the other scutellar marginal setae. Postalar wall without dense hair tuft. Ventral margins of abdominal tergites usually with rather weak vestiture, often hair-like, if moderately strong spiniform setae present then these directed backwards as well as downwards
RUTILIA Robineau-Desvoidy (a few forms)
- Apical scutellar setae inserted at the same level as the other scutellar marginal setae. Postalar wall with dense hair tuft. Ventral margins of abdominal tergites with very strong spiniform setae directed downwards
FORMOSIA Guérin-Méneville
- 5 Dorsum of thorax with four broad bold black vittae which are interrupted at the transverse suture, appearing therefore to have eight elongate black spots (four on prescutum and four on scutum). Palpi much shorter than mentum. Postorbits with alternating silvery white and black spots which shift in appearance with direction of the light. Facial carina strongly bulbous on upper part and strongly contracted into sharp median ridge on lower part. Parafacials fully haired, hairing reaching to a level below the lowest point of the eye and virtually continuous with hairing on the genal dilations. [Western Australia]
CHRY SOPASTA Brauer & Bergenstamm
- Dorsum of thorax without such pattern. Palpi as long as or almost as long as mentum. Postorbits without pattern of alternating white and black areas. Facial carina broad and flattened on anterior surface with subparallel sides, or

widened above and contracted ventrally (in latter case not normally formed into a very narrow sharp ridge). Parafacials bare or haired, but if haired the hairing not normally extending below the lowest point of the eye in profile and haired area of parafacials well separated by conspicuous bare area from haired genal dilations 6

- 6 Intermediate abdominal tergites without discal setae. Facial carina usually very broad and flattened, often slightly sulcate, with subparallel sides, at most only a little knob-like dorsally and contracted ventrally. Abdomen without bold black-and-white pattern (rare exceptions). [Forms often with deep median depression in abdominal T₅ or with partly metallic head]

RUTILIA Robineau-Desvoidy (most forms)

Intermediate abdominal tergites with discal setae (rarely lacking on one or both tergites but if so then abdomen with black-and-white pattern). Facial carina widest dorsally between junctions of second and third antennal segments and conspicuously narrowed ventrally, not subparallel-sided and not flattened on anterior face. Abdomen most often with bold black-and-white pattern (not in subgenus *Paramphibolia*). [Forms without wide median depression in abdominal T₅ and with the head always non-metallic] **AMPHIBOLIA** Macquart

KEY TO AUSTRALIAN SUBGENERA OF *RUTILIA*

[Note. Occasional specimens may have four postalar setae on one side and three on the other: such specimens should be run as if four setae were present on both sides.]

- 1 Parafrontals pollinose, either without metallic colour or only slightly metallic at the vertex. Hind tibia either with well developed close-set anterodorsal fringe or with some well developed *ad* or *pd* setae or with both fringe and *pd* setae. Postalar callus with three or more setae 2
- Parafrontals non-pollinose, entirely brilliant metallic green to blue-violet. Hind tibia without anterodorsal fringe and without definite *ad* or *pd* setae. Postalar callus with three setae subgenus **NEORUTILIA** Malloch
- 2 Suprasquamal ridge bare and postalar callus with four or five setae. Metallic green, blue to purplish black forms with bold white pollen spots on thorax and abdomen subgenus **AMENIAMIMA** Crosskey
- Suprasquamal ridge haired, or if bare then only three strong setae on postalar callus. Colour and pattern varied, but if bold white pollinose spots present then either only three setae on postalar callus or parafacials haired 3
- 3 Postalar callus with three strong setae. Hind tibia without a definite anterodorsal fringe (occasional species with weakly developed or irregular fringe). Two or three sternopleural setae (1 + 1 or 2 + 1), anterior *stpl* conspicuous amongst the sternopleural hair. Hair of suprasquamal ridge rather short and sparse, not noticeably crinkled and never extending on to the lower calypter (ridge bare in a few forms) 4
- Postalar callus with four or more strong setae. Hind tibia with an anterodorsal fringe. One sternopleural seta (0 + 1), at most only a very weak anterior *stpl* seta distinguishable among the hair. Hair of suprasquamal ridge long, dense and bushy, often crinkled and often extending on to basal depression of lower calypter (ridge always haired) 6
- 4 Last abdominal tergite (T₅) without a median depression, the upper surface evenly convex or at most with only a trace of flattening at the tip. Abdominal T₃ without a transverse row of marginal setae, or if a row present then the setae not markedly spiniform. Scutellum evenly convex on its upper surface. Suprasquamal ridge haired. Arista long-pubescent to short-plumose. Marginal setae

- of tergite venters usually weak or hair-like and nearly completely recumbent (not projecting noticeably downwards). ♂ sternite 5 atypical (shaped as in text-figs 32 or 33 in Crosskey, 1973) 5
- Last abdominal tergite with a median depression. Abdominal T₃ with a transverse row of at least a few, usually many, strong erect spiniform marginal setae. Scutellum distinctly flattened or slightly hollowed before the apex. Suprasqual ridge bare or haired. Arista micropubescent. Setae of inner ventral ends of abdominal tergites rather strong and directed downwards as well as backwards. ♂ sternite 5 with normal simple rounded lobes
- subgenus **RUTILIA** Robineau-Desvoidy
- 5 ♂ sternite 5 very strongly acuminate on each side and provided with a pair of submedian downwardly directed protuberances (text-fig. 33 in Crosskey, 1973). Distal membranous part of ♂ aedeagus exceptionally long and whip-like (about twice as long as the sclerotized proximal part of distiphallus, text-fig. 38 in Crosskey, 1973). Only one *post ia* seta (exceptionally a small second seta present in front of main one). ♀ normally without, or with one pair of, proclinate orbital setae. Thorax with distinct white pollinose spots or areas over mesopleuron, sternopleuron, humeral callus and supra-alar areas of scutum
- subgenus **GRAPHOLOSTYLUM** Macquart
- ♂ sternite 5 without such acuminate sides and without submedian protuberances (text-fig. 32 in Crosskey, 1973). Distal membranous part of ♂ aedeagus normal in size, shorter than proximal sclerotized part of distiphallus (text-fig. 37 in Crosskey, 1973). Normally two *post ia* setae (one only in occasional specimens). ♀ normally with two pairs of proclinate orbital setae (occasionally one or none). Thorax without distinct white pollinosity and therefore lacking bold white spots
- subgenus **MICRORUTILIA** Townsend
- 6 Last abdominal tergite (T₅) with a median depression and a median transverse row of strong erect setae. Scutellum usually distinctly flattened and without distinct preapical setae in front of the marginal row. Pteropleural hairing not developed in front of the level of the posterior *stpl* seta (text-fig. 20 in Crosskey, 1973). Head with dark ground colour. ♂ genitalia with very large broad foliaceous surstyli without pointed tips (text-figs 67-71 in Crosskey, 1973)
- subgenus **DONOVANIUS** Enderlein
- Last abdominal tergite (T₅) evenly convex across its width, without median depression or at most with only a mere trace of apicomedian hollowing: without a transverse row of strong setae, usually only with long fine erect hairing. Pteropleuron haired on the anteroventral part in front of the level of the posterior *stpl* seta (text-fig. 19 in Crosskey, 1973). Scutellum convex and with an irregular row of small but definite horizontal preapical setae in front of the marginal setae. Head usually with bright yellow ground colour. ♂ genitalia with elongate surstyli which end in a sharp pointed tip (text-figs 72-84 in Crosskey, 1973)
- subgenus **CHRYSORUTILIA** Townsend

KEY TO SUBGENERA OF *AMPHIBOLIA*

- 1 Thorax and abdomen with bold black-and-white pattern. Apical pair of scutellar setae approximately as strong as the other scutellar marginal setae. Lobes of ♂ sternite 5 simple and rounded on hind margin subgenus **AMPHIBOLIA** Macquart
- Thorax and abdomen without such pattern. Apical pair of scutellar setae much weaker than other scutellar marginal setae (sometimes absent). Lobes of ♂ sternite 5 each with a small blunt tooth or prong on inner edge near the apex subgenus **PARAMPHIBOLIA** Brauer & Bergenstamm

SUBFAMILY TACHININAE WITH KEYS TO THE TRIBES AND GENERA

This subfamily is to some extent an artificial assemblage of forms that cannot readily be fitted into the other, more discretely defined, subfamilies. Some authors split the group into two or more subfamilies, but as these have not yet been very satisfactorily delimited on a world basis it is considered best for present purposes to recognize the Tachininae in a broad sense. As used here the subfamily equates almost exactly with the concept referred to as the Macquartiinae by van Emden (1960) in his treatment of the Ethiopian Tachinidae (the nomenclature difference arises from the fact that van Emden applied the name *Tachina* Meigen to the genus that should correctly be known as *Exorista* Meigen and used the name *Echinomya* Latreille for the genus that should correctly be called *Tachina*). The usage van Emden adopted has long bedevilled the nomenclature of the Tachinidae and is only now being gradually dropped as the correct usage under the rules of nomenclature becomes gradually established. The subfamily here considered is the one containing the true genus *Tachina* Meigen, type-genus of the Tachinidae, and Tachininae is the correct name applying to it; the names Echinomyiinae, Macquartiinae and Voriinae are synonyms.

The diverse nature and probable polyphyletic origin of the forms included in the Tachininae make it difficult to define the subfamily at all precisely; to some extent it has to be defined by the non-possession of several of the features found in the other subfamilies. There is no single characteristic or any combination of a few features that will absolutely serve to place any particular genus within the Tachininae, but the following list shows the main characteristics that help towards a definition of the subfamily on external adult characters.

Head without a facial carina separating the antennae (at most with a weakly raised median facial ridge or with a convexity on the upper face below the antennal insertions); frontal setae rows descending to the level of the first antennal segment or below; reclinate orbital setae usually present (not in forms with strongly approximated eyes and reduced frons); inner vertical setae often convergent or crossing; uppermost eye facets of ♂ sometimes enlarged; vibrissae nearly always well developed; arista pubescent or plumose; thoracic and abdominal chaetotaxy often fine or reduced; prosternum usually bare; prosternal membrane bare (very rare exceptions); humeral callus with two or more setae normally distinguishable; usually at least three *post dc* setae; two or three *post ia* setae (less in some rare aberrant forms); pre-alar seta almost always weaker than first *post dc* seta, sometimes absent; normally at least two distinguishable *sa* setae (one only in Palpostomatini); postalar callus with two setae (very rarely three or only one); scutellum normally with at least two pairs of marginal setae (one pair only in some Minthoini); sternopleural setae two or three (rarely less, *very rarely* more than three); infrascapular hairs present or absent; fore coxa sometimes haired on its entire anterior surface; mid tibia with a ventral submedian seta (occasionally undeveloped or minute); hind tibia with or without a *pv* apical seta; abdomen with T1 + 2 excavate or not excavate to its hind margin; sternites of abdomen concealed or exposed; ♂ hypopygium and ♀ postabdomen of varied form.

KEY TO AUSTRALIAN TRIBES OF TACHININAE

- 1 Ocelli absent. Prosternal region greatly inflated, visible in profile. ♂ head holoptic and with the uppermost eye facets enlarged and conspicuously bigger than lowermost facets. Vibrissae absent **ORMIINI** (p. 57)
- Ocelli present. Prosternal region normal, no trace of inflation. ♂ head not

- holoptic (although eyes sometimes very strongly approximated and frons then very reduced), facets not obviously enlarged (except in Palpostomatini) 2
- 2 Epistomal region of the head prominent, visible in profile projecting in front of the vibrissae (sometimes head strongly subnasute) (Text-figs 41-46). Vibrissae inserted at a level well above the epistomal margin (only slightly above in some Leskiini). Abdominal sternites at least partially exposed between the ventral ends of the tergites (except in Leskiini) (as in Text-fig. 20) 3
- Epistomal region of the head not prominently projecting, invisible in profile (Text-figs 32-38). Vibrissae inserted about on a level with the epistomal margin (undeveloped in some forms). Abdominal sternites concealed by the overlapping ends of the tergites (except in Myiotrixini) 7
- 3 Abdominal sternites concealed by overlapping tergite ends (which meet in mid-venter). Scutellum with two pairs of marginal setae (basals and subapicals), without apical setae (except in *Demoticoidea* which has apical setae in addition). Humeral callus usually with two or three setae **LESKIINI** (p. 67)
- Abdominal sternites at least partially exposed, ventral ends of the tergites not meeting in the mid-venter. Scutellum with three or more pairs of marginal setae (including a strong crossed apical pair). Humeral callus with four or more setae 4
- 4 Hind coxa with long fine hair on the posterodorsal surface. Eyes bare. Parafacials haired. Four *post dc* setae **TACHINI** (p. 74)
- Hind coxa bare on the posterodorsal surface. Eyes haired, or if bare (*Amphitropesa* and *Neximyia*) then parafacials also bare. Parafacials bare or haired. Three or four *post dc* setae 5
- 5 Hind tibia without a *pv* apical seta. Two *post ia* setae (weak third present in *Australotachina*). Postabdomen of ♂ very large, tergites 6 and 7 + 8 forming an exposed vertical declivity at end of the abdomen. Scutellum with three pairs of marginal setae (except *Australotachina* with four). Bend of vein *M* without an *M*₂ fold or spur-like appendix. Mid tibia without a submedian *v* seta in ♂, with such seta in ♀. Parafacials bare **PARERIGONINI** (p. 71)
- Hind tibia with a *pv* apical seta (except in *Amphitropesa*). Three *post ia* setae. Postabdomen of ♂ not of this form, tergites 6 and 7 + 8 not externally visible or only T7 + 8 just visible when hypopygium in situ. Scutellum with four or more pairs of marginal setae. Bend of vein *M* usually with a trace of an *M*₂ appendix or fold. Mid tibia of both sexes with a submedian *v* seta. Parafacials bare or haired 6
- 6 Palpi very reduced, often minute or virtually absent (very much less than half as long as the mentum). Parafacials haired (except in *Linnaemya*). Eyes densely haired. Three *post dc* setae **LINNAEMYINI** (p. 72)
- Palpi moderately or fully developed (at least half as long as the mentum of the proboscis). Parafacials bare. Eyes bare or haired. Three or four *post dc* setae **ERNESTIINI** (p. 70)
- 7 Sternites of the abdomen fully exposed. Vibrissae absent. Head profile as in Text-fig. 40. Lower ends of the facial ridges expanded into a pair of broad flattened and rather evenly haired facialia, and the epistome reduced to a long narrow strip between the facialia connecting the oral margin directly with the face in the same plane. Scutellum with two pairs of marginal setae (basals and subapicals), without apical setae **MYIOTRIXINI** (p. 55)
- Abdominal sternites concealed by overlapping ventral ends of the tergites (which meet in the mid-line of the venter). Vibrissae present (but sometimes weakly differentiated from the peristomal setae, especially in Palpostomatini). Head profile not as in Text-fig. 40. Facial ridges and epistome of different form. Scutellum usually with at least three pairs of marginal setae (two pairs only in Palpostomatini and some Minthoini) 8

- 8 Scutellum with two pairs of marginal setae (Text-fig. 65). Prosternum with one or two long strong downwardly directed hairs or setae on each side. Head of ♂ almost fully holoptic and with uppermost eye facets appreciably larger than lowermost facets, head profile as Text-fig. 39. Supra-alar area of the scutum with only one strong isolated seta, viz. the first *sa* seta, both pre-alar and second *sa* setae absent (Text-fig. 54). Labellae with a pair of palpiform processes posteriorly (usually distinct). Parafacials haired. Pallid forms with unusually weak abdominal bristling, and very weakly developed postscutellum. [Parasites of scarabaeoid beetles] **PALPOSTOMATINI** (p. 53)
- Scutellum with at least three pairs of marginal setae (except in some *Minthoini*). Prosternum bare (except in *Minthoxia* and *Hyleorus*). Head of ♂ sometimes with eyes strongly approximated but not virtually holoptic, uppermost and lowermost facets not noticeably differentiated in size, head with different profile. Supra-alar area of the scutum with at least two setae and usually three (pre-alar seta normally differentiated but sometimes absent in *Minthoini*, second *sa* seta present though sometimes weak). Labellae without palpiform processes. Parafacials bare (except in *Voria* with a strong downcurved seta). Not such forms, postscutellum always strongly convex. [Parasites, where hosts known, of Lepidoptera] 9
- 9 Ocellar setae strong and reclinate. Propleuron haired. Facial ridges armed with strong downcurved setae on their whole height. Pteropleural seta absent. Humeral callus with four setae. Eyes haired. **CAMPYLOCHETINI** (p. 60)
- Ocellar setae proclinate (sometimes absent). Propleuron bare. Facial ridges bare or with weak setulae confined to their lower halves. Pteropleural seta present or absent. Humeral callus with fewer than four setae (except in *Nemoraeni*). Eyes bare or haired 10
- 10 Wing with apical part of *M* (i.e. *M*₁) and cross-vein *m-cu* exceptionally oblique, and with the last section of vein *Cu*₁ exceptionally long (much longer than *m-cu* and nearly as long as the penultimate section) (Text-figs 82-84). Head of ♂ with proclinate orbital and outer vertical setae (like the ♀), and with frons equal in width to that of ♀. Pteropleural seta absent. Presutural intra-alar seta present. Scutellum with long stiff erect preapical setae immediately dorsad of the apical setae **VORIINI** (p. 61)
- Wing with *M*₁ and *m-cu* not unusually oblique, and with the last section of vein *Cu*₁ short (at most only very slightly longer than *m-cu*). Head of ♂ nearly always with frons narrower than in ♀ and without proclinate orbital setae (except in *Halydaia*), almost always without differentiated outer vertical setae. Pteropleural seta absent or present. Presutural intra-alar seta absent. Scutellum without erect spiniform preapical setae 11
- 11 Vein *R*₁ setulose. Pteropleural seta absent. Scutellum with three pairs of strong marginal setae, the apical pair crossed and horizontal and the subapical pair very widely separated. Second costal sector haired below. Eyes bare or virtually so. 3 + 3 *dc* setae **THELAIRINI** (p. 63)
- Vein *R*₁ bare. Pteropleural seta present. Scutellum not so bristled, apical setae if present very weak. Second costal sector haired or bare below. Eyes bare or haired. 2 + 3 or 3 + 3 *dc* setae 12
- 12 Inner anterior surface of the fore coxa almost entirely haired. Eyes densely long haired. Abdominal *T*₁ + 2 excavate to its hind margin. Lower calypter haired on the dorsal surface of its outer edge (in addition to its normal fringe-hair). Face with a slight but distinct median ridge, visible in profile (Text-fig. 38). Humeral callus with four or more setae. Palpi noticeably flattened dorso-ventrally. 3 + 3 *dc* setae **NEMORAEINI** (p. 66)
- Fore coxa bare on at least most of the inner half of the anterior surface. Eyes bare or haired. Abdominal *T*₁ + 2 not excavate to its hind margin. Lower

- calypter bare on the entire dorsal surface, only with the usual fringe-hair. Face without median ridge. Humeral callus with two or three setae. Palpi not so flattened. 2 + 3 *dc* setae 13
- 13 Abdomen with the tergites partially or completely fused on the dorsal surface, sutures of the mid-dorsum largely obliterated. Scutellum rotund and nearly always with distinct preapical (dorsal) setae. Second costal sector haired ventrally. Fore tarsus not flattened. Robust forms with luteous or orange-red colouring and rather broad wings, and with a characteristic row of strong *ad* setae along the fore tibia. **GLAUROCARINI** (p. 59)
- Abdomen without any fusion of the tergites and all sutures between the tergites complete and distinct. Scutellum slightly or strongly flattened and without preapical (discal) setae. Second costal sector bare ventrally. Fore tarsus, especially in ♀, strongly flattened. More slender or very slender forms with mainly black coloration and long narrow wings, without a row of *ad* setae on the fore tibia **MINTHOINI** (p. 64)

Tribe PALPOSTOMATINI

This curious small group, which appears exclusively to parasitize adult scarabaeoid beetles, is very difficult to place systematically. It includes a small number of forms with rather pallid luteous or light reddish brown colouring that are found in Australia, Africa and the Oriental Region. It is far from clear how the group should be defined, and it is possible that some New World forms such as *Eutrixia* Coquillett and *Eutrixoides* Walton ought to be included within it; they appear to be very similar to the Oriental genus *Eutrixopsis* Townsend, which is normally placed in the Palpostomatini. *Eutrixopsis*, however, has a different conformation to the head than typical palpostomatines, lacks definite vibrissae and has the prosternum bare, and has a third pair of scutellar marginal setae, and it may be a mistake to associate *Eutrixopsis* in the same tribe as *Palpostoma*; but if this present association is correct then the palpostomatines may well have close affinity to the ormiines and to *Myiotrixia* (both of which have resemblances in the head, such as the long epistome and reduced vibrissae, to *Eutrixopsis*). The Palpostomatini have not been studied in detail and in the absence of a reliable placement they are here tentatively assigned to the Tachininae, though on certain features they could equally well be placed in the Proseninae (with which the host relations would certainly fit); *Palpostoma* itself, with its facial conformation and bristled prosternum, even resembles some *Blondeliini*, and it is not entirely fanciful to imagine some phyletic relationship to this tribe (as to some extent implied by Mesnil's (1966 : 882) placement (under the name *Palpostomina*)).

The type-genus *Palpostoma* is currently regarded as uniquely Australian, but this is almost certainly only due to the fact that the group badly needs study on a world basis. Comparison of material of the Oriental genus *Hamaxia* Walker (synonym: *Ochremeigenia* Townsend) and the African genus *Hamaxiomima* Verbeke has shown no differences of any significance from Australian material of *Palpostoma*, and undoubtedly *Hamaxia* and *Hamaxiomima* ought to be treated as synonyms of *Palpostoma*; it is inappropriate, however, to pursue this further in the present work and definite synonymy is not established at this time. (The African genus

Hamaxioides Mesnil has not been seen but appears from description to be a true palpostomatine distinct from *Palpostoma*: it differs most notably by having the prosternum bare.)

The principal features of the Palpostomatini are as follows. Eyes bare, in ♂ usually very strongly approximated above and with the uppermost facets conspicuously larger than the lowermost facets; ocelli present, often on a very strongly raised ocellar tubercle (Text-fig. 39); inner vertical setae crossed, sometimes virtually absent in ♂; proclinate orbital setae very weak and even sometimes absent in females as well as males; face very deeply excavate and strongly warped forwards at the epistome, but epistome *not* visible in profile; vibrissae weak or sometimes virtually absent, level with or a little above epistomal margin, lower ends of facial ridges often with some characteristic small stubby setulae adjacent to the vibrissae; parafacials sparsely short haired; genal dilation weak or absent; facial ridges bare (excepting the black setulae adjacent to vibrissae); occiput usually rather sunken; frontal setae weak or almost hair-like, rows extending down to about the level of the first antennal segment; arista pubescent; proboscis short, labellae usually with a posterior palpiform process (whence the name *Palpostoma*); palpi well developed; prosternum usually with one or two very long downwardly directed setae or strong hairs on each side, sometimes bare; prosternal membrane bare; propleuron bare or haired; two strong humeral setae, sometimes minute third seta distinguishable; $o + 2$ *ia* setae in most forms, sometimes $o + 1$ *ia*; $2(3) + 3(4)$ *dc* setae; *acr* setae reduced, usually $o + 1$ or $1 + 1$ but variations occur; pre-alar seta absent (or at most minute and hair-like); one *sa* seta only (this very strong and conspicuously isolated in the absence of a *pva* or a second *sa* seta); 2 or 3 *stpl* setae; barettie bare; pteropleural seta absent or weak; scutellum usually with only two pairs of marginal setae (basals, and convergent or crossed apicals) and without discal setae (third, lateral, pair of scutellar setae present in *Eutrixopsis*); postscutellum weakly developed, sometimes almost absent; infrascapular hairs present or absent; fore coxa bare on inner anterior part; leg setae rather reduced, mid tibia without or with a very small submedian *v* seta and with one small *ad* seta; hind coxa not very remote from abdominal base, bare posterodorsally; hind tibia with two dorsal preapical setae and without *pv* apical seta; tarsi not flattened; second costal sector haired ventrally; cell R_5 open or short petiolate or closed at the wing margin; bend of vein *M* rounded or moderately sharp and appendiculate; veins bare above except for fine hairs on R_{4+5} that reach part way to, or fully as far as, *r-m*; last section of Cu_1 as long as *m-cu*; distance on vein *M* from bend to *m-cu* usually as long as or longer than distance from *r-m* to *m-cu*; lower calypter very strongly *diverging* from scutellum, evenly rounded on its hind margin; abdomen with weak bristling and $T_1 + 2$ not excavate to its hind margin; $T_1 + 2$ without median marginal setae; sternites concealed.

The Australian fauna includes two genera in addition to *Palpostoma*, viz. *Apalpostoma* and *Eustacomyia*; these are very little known genera, not recorded since the original descriptions of their included species, but are here accepted as valid genera distinct from *Palpostoma*. The Oriental genus *Eutrixopsis* is included in the following key, although as already pointed out there is some doubt as to whether it truly belongs in the Palpostomatini.

KEY TO AUSTRALIAN GENERA OF PALPOSTOMATINI

- 1 Prosternum bare. No definite vibrissae or vibrissal angle. One *post ia* seta.
[Oriental Region including Japan] *EUTRIXOPSIS* Townsend
- Prosternum with one or more long seta or hair on each side directed downwards.
Vibrissae distinctly developed and head with definite vibrissal angle. Two
post ia setae. [Australia] 2
- 2 Propleuron bare 3

- Propleuron haired **EUSTACOMYIA** Malloch
 - 3 Wing with cell R_5 open to the wing margin and bend of vein M sharp and provided with a definite short M_2 appendix **APALPOSTOMA** Malloch
 - Wing with cell R_5 closed at or before the wing margin (usually short petiolate) and bend of vein M without trace of appendix **PALPOSTOMA** Robineau-Desvoidy
- [The extralimital genera *Hamaxia* and *Hamaxiomima* differ from *Palpostoma* only in having cell R_5 narrowly open at the wing margin, like *Apalpostoma*. The closure of cell R_5 probably should not be considered sufficient for generic separation and *Hamaxia* and *Hamaxiomima* would be best placed as synonyms of *Palpostoma* on a redefined basis. Similarly *Apalpostoma* should probably be merged with *Palpostoma* if the presence of a short M_2 appendix at the bend of M is the only remaining distinction]

Tribe MYIOTRIXINI

Townsend (1936) erected this tribe for the single genus *Myiotrixia* Brauer & Bergenstamm. This is a very aberrant tachinid that is still known only from the male holotype of *M. prosopina* in the Vienna Museum. The affinities of this species are very obscure and it is therefore appropriate to retain it in its own tribe until its relationships can be determined. The general appearance of the head with its very reduced antennae, lack of vibrissae and broadly dilated flattened setulose facialia is reminiscent of certain ormiines or ormiine-like forms and there may be some relationship between *Myiotrixia* and these forms, or perhaps with the Palpostomatini; any suggestions on the affinities are mere guesswork, however, in the absence of any knowledge of the female, the early stages or the host relations (the overall appearance conveys the impression that *Myiotrixia* might parasitize beetles but there is no evidence for this at present); possibly the Myiotrixini should be placed in Proseninae.

As *Myiotrixia* has been rather poorly described up to now, and not previously figured, the opportunity is here taken to provide a figure (Text-fig. 40) of the curious head and a description of the principal characters shown by the type-specimen (the thorax of the holotype is badly damaged where it is pierced by the large mounting pin but the specimen is otherwise in fair condition and most of the characters can be made out without difficulty: it appears that the specimen was still rather teneral when collected as the lunula and antennal bases are still partially retracted).

Head profile as in Text-fig. 40; eyes rather strongly oblique, with *very* short sparse hairing; vertex about twice as wide as the antennae, slightly sunken around the ocellar triangle; ocelli present, ocellar setae absent; head drawn down anteroventrally so that in profile it forms a rather sharp angle at the epistomal margin; epistome completely invisible in profile, completely flat and equibroad with the face, very sharply differentiated from facialia; facial ridges evanescent above but expanded and flattened below and reaching to anteroventral corners of the head; genal dilation well developed, obliquely reaching to anteroventral corner of the head; gena about one-fifth of eye height; parafacials very narrow, at mid point much narrower than the antennae; interfrontal area well developed, about twice as wide as a parafrontal. Inner vertical setae convergent, outer vertical setae present and strong; frontal setae in about eight pairs, inclinate and crossed, rows not reaching much below level of the lunula; two pairs of long fine erect orbital setae that are scarcely differentiated from the

frontal rows; no proclinate orbital setae; interfrontal area sparsely haired; parafrontals haired; parafacials haired on most of their height (only bare at lower ends) with similar dark hairing to that on the parafrontals; vibrissae absent; facialia with a row of long rather weak setae along the front inner edge (when head seen in profile the row extending from the level of the apex of the antenna to the anteroventral corner of the head) and elsewhere covered with long strong hairing; setulae of postocular row very weak; occiput flat above; postbuccal regions with fine dark hairing, postgenal and mid occipital regions with yellowish hair. Antennae inserted about level with eye middle or slightly above, head about as long at antennal axis as at the epistome when seen in profile; antennae exceptionally small, third segment almost orbicular and only a little longer than second segment; antennae falling short of epistome by a distance very much greater than their own length; arista pubescent, thickened only at its extreme base; proboscis very short, palpi large and flattened and unusually long haired. *Thorax*. Notopleuron rather strongly triangular, with usual two notopleural setae. Prosternum, prosternal membrane and propleuron bare. Propleural seta minute, one strong prostigmatic seta. Anterior spiracle without hair fringe around the opening, sclerotized area of the spiracle large, slightly convex and sparsely long haired. Humeral callus with two strong setae. Pteropleural seta absent, sternopleural setae 1 + 1. Three strong hypopleural setae; pleurotergite bare. [Mediotergite dirty or damaged, condition of infrascutal hairs unknown.] Barete sparsely haired anteriorly. [Chaetotaxy of mesonotum uncertain owing to extensive damage but apparently as follows: 1 + 3 *ia* setae (of which *prst* and first *post ia* hair-like); probably 2 + 3 *dc*; at least 1 + 2 *acr* setae but probably more; small pre-alar seta.] Scutellum with only two pairs of marginal setae (basals and subapicals), no lateral or apical setae or definite discal setae; subapical setae slightly divergent and rather weak, distance between their bases subequal to that between a subapical seta and its corresponding basal seta; hairing of scutellar disc rather weak but long and semi-erect. Postscutellum very strongly developed. *Legs*. Rather short and with very reduced chaetotaxy. Fore coxa bare on inner anterior surface; fore tibia with two minute *pv* setae. Mid tibia without a submedian *v* seta, with one very small *ad* seta on apical half and with two or three minute *p* setae. Hind coxae rather close to abdominal base, bare on posterodorsal edge; hind tibia with several very small *ad* and *pd* setae or setulae, with one small *av* seta, without definite *pv* apical seta, and without the normal *d* preapical seta (the dorsal preapical setae represented only by the *ad* preapical). *Wings*. Narrow, very faintly smoky brownish, especially anteriorly. Vein R_{4+5} with minute setulae extending from node about half-way to *r-m*, wing veins otherwise bare. Second costal sector bare below. Cell R_5 well open at wing margin. Bend of vein *M* evenly and gently rounded, no trace of appendix; distance on *M* from bend to *m-cu* subequal to that between *r-m* and *m-cu*; *m-cu* straight, apical section of Cu_1 very short and only about half as long as *m-cu*. Second costal sector short (length not exceeding that of *m-cu*). Sixth vein stopping well short of wing margin. Calyptrae normal, lower one moderately broad and bare on dorsal surface. *Abdomen*. Short subovate with $T_1 + 2$ not excavate to its hind margin; each visible tergite subequal in length. Sternites exposed, isolated in wide membranous area of abdominal mid venter. Abdomen completely devoid of bristles, vestiture composed solely of short fine recumbent hairing (the hairing only slightly longer at tergite margins than elsewhere and nowhere erect). All sutures between tergites normal, no trace of fusion. ♂ hypopygium small, no noteworthy external characters [not examined at this time as holotype unique: later examination of male genitalia may well shed light on the affinities]. *Coloration*. Almost entirely blackish brown; antennae, lower end of interfrontal area and area of head between genal dilation and facialia paler reddish brown; abdomen covered with pale yellowish pollinosity that is thickest on basal parts of the tergites, the tergites therefore appearing darkest towards hind margins and also medially but appearance slightly shifting with light direction. Body hair black or brownish black except for some yellowish hair posteriorly on the head. *Measurements*. Body length about 6.0 mm, wing length 5.3 mm.

The holotype bears three handwritten ink labels that read '56', 'Thorey 1864

Austra. sept' and 'N.G. [=new genus] ad Oestrophasia N. Holl.', and Brauer & Bergenstamm's determination label that reads 'prosopina det. B. B.' (specific name handwritten, remainder printed).

Tribe ORMIINI

This small tribe occurs mainly in the tropical and subtropical parts of the world, and contains some of the most aberrant forms to be found in the Tachinidae. Several genera have the chaetotaxy very reduced and have a robust form and curious head facies reminiscent of the Oestroidea. Biologically the group is particularly interesting because the first-stage larva is the most perfectly formed planidium occurring in the Diptera (though *Glaurocara* has a similar planidium: see under Glaurocarini) and the hosts appear always to be nocturnally active Orthoptera (crickets and Tettigoniidae s.l.). Many forms have the pallid coloration often associated with nocturnally active flies.

At present the Ormiini are uniquely characterized by having the prosternal region of the thorax greatly inflated (usually more so in females than males) and visible when the fly is seen in profile. The function of this oddly modified prosternum is unknown; such a feature occurs in no other Tachinidae. Another very unusual character among Tachinidae that occurs in many Ormiini is the reduction of the ocelli, some genera having the ocelli vestigial or totally wanting; all the ormiines so far known in the Australasian fauna and in the African fauna are without ocelli. In the Oriental fauna the genera *Homotrixa* Villeneuve and *Xanthooestrus* Villeneuve possess ocelli, but in these genera the prosternal membrane is only moderately inflated (*Homotrixa*) or not noticeably inflated at all (*Xanthooestrus*) and it is not certain that the genera truly belong in the Ormiini.

The existence of forms such as *Xanthooestrus*, which has an entirely ormiine facies but has a normal prosternum, and of forms such as *Glaurocara*, which has a different morphological appearance yet has a perfect planidium larva and host relations like the Ormiini, poses the question of whether the Ormiini ought to be redefined on a much wider basis than at present. It appears now that a definition of the Ormiini to include only those forms with inflated prosternal membrane is too restrictive, and that several forms placed outside the group at present should be brought into it. At present, however, insufficient is known of these generally rather rare forms to permit any worthwhile re-evaluation of the Ormiini on a world basis, and the Ormiini is here accepted in its usual confined sense with the Glaurocarini recognized as a separate (rather intangibly defined) tribe.

The main characteristics of the Ormiini are as follows. Eyes very large, bare, facets conspicuously enlarged in most males; head of ♂ usually holoptic or almost so, ♂ frons therefore virtually absent; ocelli present or absent, when present often strongly raised in ♂; inner vertical setae absent in male, usually present and converging or crossed in ♀; proclinate orbital setae absent in ♂, weak in ♀; parafacials bare; epistome not projecting, invisible in profile, often formed into a receding strip which curves for a long distance between a reduced face and the oral cavity; oral cavity, proboscis and palpi often exceptionally reduced; vibrissae present or absent, when absent lower ends of facialia usually formed into broad haired areas on each side of the epistomal strip; genal dilation weak or virtually absent; occipital region

flat; frontal setae reduced or hair-like, rows reaching about to level of first antennal segment; antennae small or minute, third segment rounded apically and usually not longer than second segment, ends of antennae falling short of margin of oral cavity by a distance at least equal to length of third antennal segment and usually by a distance much greater than their own length; arista bare to short plumose; prosternal region inflated, prosternum and membrane bare; propleuron bare; propleural and prostigmatic setae often hair-like; humeral callus with two strong setae in most forms; mesonotal chaetotaxy varied, often much reduced (Text-fig. 55), normally $2 + 3$ *dc* setae and $0 + 1$ or $0 + 2$ *ia* setae (rarely a minute third *post ia* or no *ia* setae at all); *pra* seta small or very small, either one or two *sa* setae; usually two *stpl* setae, sometimes only one; pteropleural seta absent or present (if present usually weak); infrascapular hairs absent; scutellum usually with three pairs of marginal setae, the apicals usually crossed; fore coxa usually bare on much of inner anterior surface; mid tibia without submedian *v* seta or with a small *v* seta; hind coxae bare posterodorsally, not remote from abdomen; hind tibia with small *pv* apical seta and two dorsal preapicals; wing with second costal sector usually rather long and haired ventrally; costal margin sometimes (in New World forms only) with callus-like dilation between apices of R_1 and R_{2+3} in ♂; cell R_5 open or closed; bend of vein *M* very sharp, usually about a right-angle, usually with short M_2 stump-like appendix; distance from bend of *M* to *m-cu* shorter than or subequal to *m-cu/r-m*; upper surface of wing veins totally bare or with a few minute hairs only on basal node of R_{4+5} ; lower calypter broad, inner posterior angle close to scutellum; abdomen rotund, usually with much reduced chaetotaxy, often without any definite bristles; $T_1 + 2$ excavate to hind margin; sutures of abdomen distinct; intermediate abdominal tergites always without discal setae; sternites widely exposed; ♀ terminalia modified for deposition of planidia.

In Australia the Ormiini were unknown until Paramonov (1955) described two species from Queensland and assigned them to the supposedly new genus *Ormiominda* Paramonov. In an earlier paper (Crosskey, 1966b) it was shown that *Ormiominda* cannot be distinguished from the widespread Old World ormiine genus *Therobia*, and the opinion given earlier that *Ormiominda* is a synonym of *Therobia* is here upheld as undoubtedly correct. *Therobia* is the only genus of the tribe yet known in Australia, but it is possible that *Phasioormia* Townsend occurs in north Queensland; the latter genus occurs from Burma to Papua and may ultimately be found in Australia (hence its inclusion in the key that follows). Finally it may be noted here that Paramonov's species of *Therobia* from Queensland seem rather doubtfully distinct, and it is also uncertain whether either or both are really separate species from *T. braueri* (Kertész) from New Guinea, *T. vesiculifera* Bezzi from Fiji, or *T. insularis* Séguy from New Caledonia (some or all of which may well be synonymous with each other).

KEY TO AUSTRALIAN GENERA OF ORMIINI

- 1 Epistome forming a long narrow strip running from the oral cavity to the antennal apices and flanked on each side by broad flattened and rather evenly haired facialia. No vibrissae. Antennae minute, length much less than a quarter of eye-height, apices separated from the oral cavity by a distance very much greater than their own length. Oral cavity extremely reduced and subcircular. Frons of ♀ usually noticeably tapering towards the ventral end . . . **THEROBIA** Brauer
- Epistome normal, without such form. Vibrissae distinct. Antennae not exceptionally small, length greater than a quarter of eye-height, apices separated from oral cavity by a distance less than their own length. Oral cavity not exceptionally reduced, normally obviously longer than its width. Frons of ♀ with parallel sides

PHASIOORMIA Townsend

Tribe **GLAUROCARINI**

This is a very small tribe that is confined to the Old World tropics and subtropics and contains only the two genera *Glaurocara* Thomson and *Doddiana* Curran; other supposed Old World genera have been described (*Oestrocharis* Villeneuve, *Semisuturia* Malloch and *Oestrocara* Townsend) but these are now treated as synonyms (Crosskey, 1962). Townsend (1936) placed several New World genera in the tribe but none of these have the fused abdominal tergites of true Glaurocarini and evidently do not belong. *Doddiana* occurs from Java to Queensland and New South Wales, and *Glaurocara* occurs in Malaya, the south-east Asian archipelago, the Ethiopian Region and Mauritius; Mauritius is the type-locality of *G. flava* (type-species of *Glaurocara*) and is also a locality into which *Doddiana mellea* (Wiedemann) has been unsuccessfully introduced from Java for control of sugar-cane moth borer.

The only host recorded for the genus *Doddiana* is the sugar-cane moth borer *Chilo sacchariphagus* (Bojer) (Lepidoptera: Pyralidae), which is apparently attacked by *Doddiana mellea* in Java. This is a curious record, as *Doddiana* is without doubt very closely allied to *Glaurocara* and the type-species of this genus, viz. *G. flava* Thomson from Africa, is a parasite of nocturnally active tettigoniid Orthoptera (Crosskey, 1965*b*). It is odd that species of two such similar genera as *Doddiana* and *Glaurocara* should attack hosts as different as a pyralid and a bush-cricket. It seems probable, however, that Orthoptera are the normal hosts of the Glaurocarini, as *Glaurocara* first-stage larva is a perfect planidium closely similar to that of the Ormiini and the ormiines (so far as is known) are exclusively parasites of Grylloidea and Tettigonioidea. *Glaurocara* also resembles the Ormiini in being nocturnally active and in having the pallid luteous yellow coloration characteristic of night-flying Diptera, and its female reproductive system is of Townsend's type XXXII which is elsewhere found only in the Ormiini. On these grounds it appears that the Glaurocarini are closely allied to the Ormiini, although they differ obviously from the latter tribe by having the sutures between the abdominal segments largely fused above and in having a normal prosternum (without trace of the inflation of the prosternal region as occurs in Ormiini).

The chief characteristics of the tribe are as follows. Head unusually small for body size; eyes usually with some *very* minute sparse hairing (appearing bare at first glance); ♂ head with eyes strongly approximated and frons reduced but *not* holoptic; ocelli present, usually rather raised; inner vertical setae present in both sexes, usually convergent or crossed; ♂ without proclinate orbital setae, ♀ with two pairs (very strong); ♀ with one pair of reclinate orbital setae; parafacials bare; frontal setae moderately strong, rows reaching to a level with first antennal segment; epistome flat, invisible in profile, face rather flat; oral cavity, proboscis and palpi very small; vibrissae present, inserted about level with or just above epistomal margin; facial ridges with a few setulae above vibrissae, otherwise bare; genal dilation weak, only reaching at most half way forwards on the genal region, usually bearing some rather strong setae or setulae (Text-fig. 34); occiput moderately flat above; antennae small (length about half the eye height), inserted about on a level with eye middle; arista with short or long pubescence; prosternum not inflated, bare, prosternal membrane bare; propleuron bare; prostigmatic and propleural setae very strong; humeral callus with two strong setae (sometimes a weak third seta present mesad of main two); mesonotal chaetotaxy usually as in Text-fig. 57; 0 + 2 or 0 + 3 *ia* setae; 2 + 3 *dc* setae; *acr* setae variable; *pra* seta weak or absent, second

sa seta present but very weak; pteropleural seta present; 2 *stpl* setae; infrascapular hairs absent; scutellar setae very variable, but always at least three pairs of marginals, subapical pair subparallel or weakly divergent and inserted close together, discal scutellar setae almost always present, scutellum unusually rotund; fore coxa bare on inner anterior half, fore tibia with a row of strong *ad* setae or setulae along its length (usually also with some small *p* setae in addition to the normal *pv* setae), mid tibia with a submedian *v* seta; hind coxae not remote from abdominal base, bare posterodorsally; hind tibia without *pv* apical seta, with two dorsal preapical setae; wings relatively large compared to body size; second costal sector haired below; cell R_5 narrowly open at wing margin; bend of vein *M* abrupt, with or without M_2 appendix; distance from bend of *M* to *m-cu* less than that between *r-m* and *m-cu*; last section of Cu_1 shorter than *m-cu* (Text-fig. 81); wing veins bare above except for some minute setulae on basal node of R_{4+5} ; lower calypter moderately broad, inner posterior angle near to scutellum; abdomen rotund, dorsally with the sutures between the tergites mainly obliterated by tergite fusion; $T_1 + 2$ excavate only basally; sternites concealed.

KEY TO GENERA OF GLAUROCARINI

- 1 Bend of vein *M* very abrupt and with a distinct M_2 appendix. Tip of the scutellum with a pair of small fine straight apical setae between the strong close-set subapical setae (if rarely there are no distinct apicals then tip of scutellum with at least some hairs between the subapical setae) **GLAUROCARA** Thomson
- Bend of vein *M* moderately abrupt but without trace of M_2 appendix. Tip of scutellum without apical setae and usually totally bare between the bases of the strong close-set subapical setae **DODDIANA** Curran

Tribe CAMPYLOCHETINI

Townsend (1936) erected this tribe for a small number of genera found in each of the major zoogeographical regions and apparently closely allied to the Voriini. The group is easily recognized by having the strong ocellar setae directed backwards (a very unusual character found elsewhere in Australian Tachinidae only in the Goniini and in *Leucostoma*) and simultaneously having the propleuron haired and the facial ridges strongly bristled. Until now the tribe has not been reported from Australia, but recent collecting has shown the presence of some undetermined (probably new) species in Australia and Tasmania that clearly belong in the genus *Elpe* Robineau-Desvoidy; this is the only genus so far discovered in Australasia. The genus *Elpe* is widespread in the Palaearctic, Ethiopian and Oriental Regions but apparently does not occur in the New World. Mesnil in various publications has referred several species of the genus to *Frivaldskia* Schiner (= *Fallenia* Meigen, preoccupied), but the true *Frivaldskia* (type-species *F. longicornis* (Fallén)) has the parafacials partially haired and cell R_5 closed and appears to be generically distinct from *Elpe* (van Emden, 1960 : 351). (Here it may be noted in passing that *Frivaldskia* is the correct original spelling and that the various alternatives such as *Frivaldszkia* and *Frivaldzkia* that have currency in the literature are incorrect subsequent spellings.)

Van Emden (1960) placed *Elpe* as a subgenus of *Campylocheta* Rondani, but the latter has a different facies from *Elpe* and has three (instead of two) *stpl* setae and extensively hairy parafacials (instead of bare parafacials as in *Elpe*). It

appears best to treat *Elpe* and *Campylocheta* as separate genera, but *Frivaldskia* ought probably to be treated as a synonym of *Campylocheta*.

The principal characters of the tribe are as follows. Eyes haired; facial ridges strongly setose (Text-fig. 33); face deeply sunken but epistome not projecting; vibrissae level with epistomal margin; antennal axis well above level of eye middle; head receding below, much shorter at vibrissal axis than at antennal axis; ocellar setae very strong and directed outwards and backwards; inner vertical setae parallel; parafacials bare, or haired on upper half only; proboscis very short, palpi well developed; prosternum and prosternal membrane bare; propleuron pale haired; humeral setae four (basal row of three and one set forwards); 2-3 + 3 *dc* setae; pre-alar seta very small; 1 + 3 *ia* setae; two or three *stpl* setae; scutellum with three pairs of very strong marginal setae (basals, subapicals and horizontal crossed apicals), subapicals extremely wide apart, occasionally a weak fourth pair of setae present *between* the subapicals and apicals; scutellum without definite discal setae; pteropleural seta absent; infrascapular hairs present or absent; fore coxa bare on inner anterior surface; mid tibia with a *v* seta; hind tibia without *pv* apical seta, usually with three strong *d* preapicals; hind coxa bare posterodorsally, with several strong setulae dorsally on node, veins usually otherwise bare above (some American forms with R_1 setulose); R_5 open or closed in wing margin (occasionally very short-petiolate); bend of vein *M* forming very obtuse angle, without appendix, remote from wing margin; distance on vein *M* from bend to *m-cu* at least equal to and usually greater than that from *r-m* to *m-cu*; apical section of Cu_1 longer than *m-cu*; second costal sector very short and haired ventrally; calyptrae normal; abdomen with $T_1 + 2$ excavate to, or almost to, its hind margin; $T_1 + 2$ without median marginal setae; intermediate abdominal tergites with discal setae; T_5 with a complete transverse row of very strong erect discal setae around the upper surface; sternites concealed; male hypopygium very conspicuous, $T_7 + 8$ at least partially exposed, cerci enormous and curved forwards (slightly hook-like) in profile.

Finally here it should be noted that the spellings *Campylochaeta* and *Campylochaetini* in the literature are erroneous, as *Campylocheta* Rondani is the correct original spelling in nomenclature.

Tribe VORIINI

Most of the members of this tribe have a very characteristic head facies and wing venation and it is usually possible to recognize the voriiines easily once one of the genera has been seen in a named collection; often one glance at the wing is sufficient for reliable tribal placement. The notable features of the head and wing alluded to are listed in detail later. The tribe is nearly cosmopolitan, and includes four genera in New Zealand; in this tribe there is therefore, perhaps, some faunal connection between Australia and New Zealand. Three genera are known from Australia, all of which occur also outside the area: *Voria* occurs widely in the New World and throughout most of the Old World, *Afrovorio* occurs in Africa, India and Western Australia, and *Hyleorus* occurs in New Guinea as well as Australia. When the Voriini are studied in more detail it will almost certainly be concluded that *Hyleorus* is widespread also in the Ethiopian Region and Eurasia (including Japan) as there appears to be little doubt that the genus *Steiniomyia* Townsend (synonyms *Neuroplagia* Townsend and *Afroplagia* Curran) is identical with *Hyleorus*; comparison of material of several species of *Steiniomyia* (including *elata* Meigen, the type-species) with *Hyleorus* from New Guinea and Australia has shown no

differences that could fairly be interpreted as of generic significance, but it is outside the scope of this work, to consider this further at present (as *Hyleorus* has priority and will stand as the valid name in any case) and definite synonymy is not established at present.

The main characteristics of the Voriini are as follows. Head not noticeably sexually dimorphic, both sexes with outer vertical setae and proclinate orbital setae; eyes bare or haired; ocellar setae divaricate-proclinate or absent; inner vertical setae subparallel; facial ridges bare, or weakly setose for half their height; parafacials usually with hairs or strong downcurved setae on part of their height, sometimes bare; face rather flat, epistome not projecting (invisible in profile); vibrissae level with epistomal margin; upper occiput without black setulae; antennal axis about level with or slightly above eye middle; proboscis short, palpi well developed; antennae often with second segment unusually long in relation to third, arista thickened on at least half its length, often with second basal segment very elongate; prosternum bare or haired, prosternal membrane bare, propleuron bare (haired in a few rare exceptions); humeral callus with two strong setae and usually a third smaller seta mesad of main two and one small seta set forwards; mesonotal chaetotaxy typically as Text-fig. 59; $1 + 3$ *ia* setae; 2 or 3 + 3 *dc* setae (very rarely four *post dc*); pre-alar seta very small; three sternopleural setae (very rarely only two); pteropleural seta either absent or enormously strong; infrascapular hairs present or absent; scutellum with three pairs of strong marginal setae (basals, widely spaced subapicals and crossed horizontal apicals), and nearly always with a pair of long strong stiff erect preapical setae immediately above the apicals (sometimes some additional long stiff erect setae further forwards on the disc of the scutellum in addition); fore coxae usually haired on most of its inner anterior surface; fore tibia typically with a series of definite *ad* setae or setulae along its length; mid tibia with a *v* seta; hind coxa bare posterodorsally; hind tibia with or without small *pv* apical seta and with two *d* preapicals; wing extensively setulose dorsally on the veins (R_{1+5} setulose on much of its length, R_1 and Cu_1 also often setulose); bend of vein *M* strongly angulate and remote from wing margin, *M* continued towards the wing margin by a long or often very long M_2 spur vein or by a darkened fold (Text-figs 82–84); last section of vein Cu_1 much longer than *m-cu* and nearly as long as or even longer than penultimate section; M_1 and *m-cu* usually exceptionally oblique (some New Zealand forms with *m-cu* non-oblique); cell R_5 usually open at wing margin, sometimes closed in margin or long-petiolate; second costal sector short or very short, bare or haired ventrally; abdominal $T_1 + 2$ excavate to its hind margin or almost so; sternites concealed; ♂ hypopygium with exceedingly long slender curled aedeagus.

KEY TO AUSTRALIAN GENERA OF VORIINI

- 1 Parafacial bare, without either hairs or strong downcurved setae. Arista thickened on more than half its length, second aristal segment at least twice and usually more than twice as long as its greatest breadth 2
 - Parafacial with a very strong downcurved seta inserted at the upper end immediately below the lowermost frontal seta (Text-fig. 37). Arista thickened only on its basal half, second aristal segment not longer than wide or only inconspicuously so
- VORIA** Robineau-Desvoidy
- 2 Prosternum haired (sometimes only a single hair on each side). Eyes obviously hairy. M_2 spur vein exceedingly long, usually much longer than the section of vein *M* between *m-cu* and the bend (Text-fig. 84) [slightly shorter in an undescribed species from Philippines]. Both intermediate abdominal tergites with erect discal setae. Facial ridges setulose on half their height (in profile no gap between the uppermost setula on the facial ridge and the lowermost frontal seta)

HYLEORUS Aldrich

[The Eurasian and African genus *Steiniomyia* Townsend runs here and has all the essential characters of *Hyleorus*. It should be treated as a synonym of the latter, but definite synonymy is not established at this time]

- Prosternum bare. Eyes bare or almost completely so. M_2 spur vein or fold short, not nearly as long as the section of M between $m-cu$ and the bend (Text-fig. 82). One or both intermediate abdominal tergites without discal setae. Facial ridges bare (except for the usual very few setulae immediately above the vibrissae)

HYSTRICOVORIA Townsend

[The Ethiopian and Oriental genus *Afrovorio* Curran (synonym *Anavorio* Mesnil) runs here and has all the essential characters of *Hystricovoria*. It should probably be treated as a synonym of the latter, but definite synonymy is not established at this time]

Tribe THELAIRINI

This is a small but widely distributed tribe occurring in both Old and New Worlds. The type-genus *Thelaira* is found throughout the Palaearctic and Oriental Regions, Africa and Madagascar, in New Guinea and in eastern Australia south to Tasmania, and in the New World occurs southwards as far as Mexico; in the Pacific area the genus is apparently unrepresented eastwards of New Guinea. The only genus found so far in Australia, other than *Thelaira*, is *Halydaia*, a very distinctive form occurring in most of the Oriental Region eastwards to Japan, the Ryukyu Islands, New Guinea, the Solomons and Australia (excluding Tasmania); at least one rare species of *Halydaia* occurs also in western Europe. In the Old World *Halydaia* appears to be rather disjunct from other thelairines, but the genus appears to be rather closely related to the Neotropical genus *Xanthodexia* Wulp (syn. *Minthodexia* Brauer & Bergenstamm) which is somewhat intermediate between *Halydaia* and the more typical Thelairini.

The chief characteristics of the Thelairini are as follows. Eyes bare or virtually so (some very minute hairs can sometimes be made out under high power examination); parafacials bare; eyes extremely large and filling most of the sides of the head, gena correspondingly very reduced and without a definite genal dilation (eyes coming so far down on the head that the lowest point is usually *below* the level of the vibrissae); face and epistome flat, latter invisible in profile; vibrissae usually level with epistomal margin (above the level in the Oriental genus *Prosheliomyia* Brauer & Bergenstamm); antennae small or very small (length less than half of eye-height) and antennal axis at or below level of eye middle; arista usually short plumose or long plumose, sometimes pubescent; proboscis *very* short, mentum convex on lower edge in profile, palpi well developed (a little flattened); prosternum, prosternal membrane, and propleuron bare; two sternopleural setae (rarely three in ♂); 3 + 3 *dc* setae; pre-alar seta very small; two or three *post ia* setae (rarely specimens may have only one); infrasquamal hairs usually absent; scutellum with three pairs of very strong marginal setae (basals, subapicals, and strong crossed horizontal apicals); pteropleural seta absent (except in *Prosheliomyia* in which weak pteropleural always evident); fore coxa largely bare or fully haired on inner anterior surface; mid tibia with a *v* seta; hind coxa bare posterodorsally; hind tibia without a *pv* apical seta; upper surface of wing setulose at least on R_{4+5} half way to *r-m*, often veins R_1 and Cu_1 extensively setulose (R_1 setulose along all its length in both genera occurring in Australia); cell R_5 open to the wing margin; bend of vein M moderately sharp or rather evenly rounded, usually without M_2 appendix; second costal sector haired ventrally; excavation of $T1 + 2$ variable, usually not quite reaching hind margin of tergite;

abdomen often with discal setae (discals present on T3, T4 and T5 in both Australian genera); sternites concealed.

Attention should be called to the spelling of the generic name *Halydaia*. This name in Tachinidae is usually spelled *Halidaya*, and this is reasonable from a common-sense point of view since the genus was named in honour of the dipterist Haliday. However, Egger (1856) was apparently under the impression that Haliday's name was spelt as 'Halydai' as he wrote 'Ich habe sie zu Ehren des englischen Dipterologen A. H. Halydai *Halydaia* genannt', and nowhere in the original description does the spelling Haliday or *Halidaya* appear. In this curious circumstance it is open to question how Article 32 (a) of the *International Code of Zoological Nomenclature*, 1961, applies, but *Halydaia* is held here to be a correct original spelling; Egger was in the belief, it appears from the publication, that Halydai was a correct spelling and the spelling of the generic name *Halydaia* was therefore *intentional* (and cannot be held to be an inadvertent error).

It is necessary to have it established beyond doubt that *Halydaia* is the correct spelling of the name of the Tachinid genus, because if not then the name *Halidaya* in tachinids enters into homonymy with *Halidaya* Rondani in the Sepsidae, which by unfortunate coincidence was published in the same year (1856) as *Halydaia* Egger. (It is not evident at present whether Egger's or Rondani's was the earlier of the two works, but as *Halydaia* Egger is held to be valid under the *Code* there is no homonymy with *Halidaya* Rondani and it is irrelevant which name is the prior one.)

KEY TO AUSTRALIAN GENERA OF THELARIINI

- 1 Antennae inserted at a level far below the eye middle (Text-fig. 36). Head in facial view with the eyes converging ventrally so that the facial region is narrower than the frons. Both sexes with 5 or 6 pairs of strong proclinate orbital setae (Text-fig. 36). Arista pubescent. Eyes so large that they reach the peristome and virtually obliterate the gena (Text-fig. 36). Scutellum without discal setae. Interfrontal area reduced, much narrower than a parafrontal. Fore coxa haired only on apical half of the inner anterior surface. Legs reddish yellow (except sometimes for dark tarsi) **HALYDAIA** Egger
- Antennae inserted at the level of the eye middle (Text-fig. 35). Head in facial view with the eyes slightly or strongly diverging ventrally so that the facial region is wider than the frons. ♂ without proclinate orbital setae, ♀ with two pairs. Arista short plumose. Eyes large but not reaching to the peristome, gena distinct and about as wide as third antennal segment (Text-fig. 35). Scutellum with a pair of semi-recumbent discal setae. Interfontal area wider than parafrontal. Fore coxa haired on whole extent of the inner anterior surface. Legs black
THELAIRA Robineau-Desvoidy

Tribe MINTHOINI

This is an Old World tribe containing a few genera of very slender tachinids with long narrow wings and elongate legs. A few New World forms have been placed in the tribe but it is doubtful whether they correctly belong. A curious feature of the group is the conspicuous flattening of the fore tarsi in the females;

usually the female fore tarsi are flattened and dilated laterally, but in a few forms (for instance the Australian *Minthoxia*) the flattening is from side to side only on the basal part with the apical segments flattened and widened dorsoventrally. The Australian fauna contains only two genera at present, *Sumpigaster* and *Minthoxia*; the first of these is a completely typical minthoine closely similar to the type-genus, *Mintho* Robineau-Desvoidy (from the Palaearctic and Ethiopian Regions), but the second has a facies rather different from typical minthoines and may resemble them at all only convergently. In the original description of *Minthoxia* it was placed in the Minthoini and compared with *Tachinodexia* Townsend (an Oriental genus very similar to *Sumpigaster*) and it seems best to retain *Minthoxia* in the Minthoini for the time being. *Minthoxia* is known only from Australia, but *Sumpigaster* (originally described from Queensland) occurs widely in the Oriental Region eastwards to New Caledonia and the Loyalty Islands. The genus *Megistogastropsis* Townsend occurs in Papua, but has not yet been found in Queensland; its occurrence there seems possible, however, and it is therefore included in the key to the Australian genera of Minthoini.

The main characteristics of the Minthoini are as follows. Eyes usually bare or almost so; parafacials bare; epistome flat; vibrissae about level with the epistomal margin; antennal axis level with or below the eye middle; arista pubescent or plumose; proboscis short, palpi fully developed; prosternum bare (except in *Minthoxia*), prosternal membrane bare; propleuron bare; two or three sternopleural setae; acrostichal setae almost always reduced to 1 + 0 or 1 + 1; 2 + 3 or 3 + 3 *dc* setae; pre-alar seta absent or minute; two or three *post ia* setae, *prst ia* seta usually absent; humeral callus almost always with two setae, occasionally a small third seta in addition; infrasquamal hairs usually absent; pteropleural seta present, but fine; scutellum rather flattened, without preapical (discal) setae, marginal setae not exceeding three pairs (always without laterals); fore coxa largely bare on anterior surface or haired on outer half of anterior surface; mid tibia with a *v* seta (often very small); hind coxa bare posterodorsally, usually rather remote from abdominal base; hind tibia usually with distinct *pv* apical seta; upper surface of wing with a few minute setulae on base of R_{4+5} , veins otherwise bare; cell R_5 open or short-petiolate; second costal sector bare or haired ventrally; bend of vein *M* varied, usually rather abrupt, with or without M_2 appendix, sometimes gently rounded; wings usually very long, apical part of Cu_1 shorter or much shorter than *m-cu*; $T_1 + 2$ usually not excavate to hind margin; some abdominal tergites usually with discal setae; sternites (except basal sternite) concealed; abdomen usually very long and slender.

KEY TO AUSTRALIAN GENERA OF MINTHOINI

- 1 Eyes bare or virtually so. Prosternum bare. Acrostichal setae usually 1 + 0, occasionally 1 + 1. Three *post ia* setae (sometimes weak, middle one undeveloped in occasional specimen). Mid tibia with one *ad* seta. Very slender forms with elongate legs 2
- Eyes conspicuously haired. Prosternum setulose. Acrostichal setae variable but numerous, at least 2 + 3. Two *post ia* setae (both strong, wide apart). Mid tibia with two *ad* setae. Not such slender forms, legs (especially fore tarsi) robust **MINTHOXIA** Mesnil
- 2 Abdomen with strong discal setae on last visible tergite (T_5), similar to those on T_3 and T_4 . Arista plumose (Text-fig. 32). Second costal sector bare ventrally. Scutellum with two pairs of marginal setae (either basals or apicals or both present in addition to subapicals). Bend of vein *M* sharp, with or without M_2 appendix. Pre-alar seta almost always completely absent **SUMPIGASTER** Macquart

- Abdomen without discal setae on T₅. Arista pubescent. Second costal sector haired ventrally. Scutellum with only one pair of marginal setae (the subapicals), basal and apical setae absent. Bend of vein *M* forming an evenly rounded curve without trace of appendix. Pre-alar seta almost always present, though small. [Indonesia & New Guinea] *MEGISTOGASTROPSIS* Townsend

Tribe NEMORAEINI

This small tribe is confined to the Old World and contains only the genera *Nemoraea* Robineau-Desvoidy (of which *Protonemoraea* Baranov and *Dexiomima* Brauer & Bergenstamm are now treated as synonyms) and *Chaetolydella* Villeneuve. The latter genus is African and is not really distinguishable from *Nemoraea*, as van Emden (1960) states, but this is not the place in which to establish synonymy. *Nemoraea* is widely distributed throughout the Palaearctic Region (including Japan), Africa, and the Oriental Region, but until now has not been reported from Australia. One undescribed species is now known from New South Wales and Queensland; this species has a mainly orange-red abdomen and a black-and-yellow striped scutum and closely resembles *N. ornata* (Bigot) from the Oriental Region (it also has a superficial appearance very reminiscent of the New Zealand genus *Prothystricia* Malloch, which belongs in the local New Zealand tribe Occisorini). In New Guinea the *Nemoraea* fauna contains at least four undescribed species, and there are some large and spectacular species still undescribed in the Oriental fauna.

The numerous species of *Nemoraea* tend to fall into two moderately distinct categories, one containing species in which the whole surface of the lower calypter is haired and the second costal sector bare ventrally and the other containing species in which hairing of the upper surface of the lower calypter is confined to the outer edge and the second costal sector is haired below (the Australian species falls into the latter category). The name *Nemoraea* strictly applies to the first group, and the names *Dexiomima* and *Protonemoraea* to the latter group. Many intermediates exist, however, and the current treatment of all the forms as comprising the single genus *Nemoraea* is appropriate; examples of intermediate species, falling between the two main categories, are *N. echinata* Mesnil from Burma in which the outer half of the lower calypter is haired, and *N. dotata* (Walker) from Celebes in which the lower calypter has hair only on the outer margin but in which the second costal sector is bare on its ventral surface.

The chief characters of the Nemoraeini are as follows. Eyes haired; parafacials bare; arista micropubescent; face usually with a distinctly raised central ridge which is rounded on its anterior surface (not forming a sharp carina); genal dilation bearing unusually strong setulae or even setae as strong as the peristomal setae (Text-fig. 38); epistome flat, invisible in profile; vibrissae level with or only very little above the level of the epistome; inner vertical setae crossed (sometimes subparallel in ♂); outer vertical setae unusually weak in ♀, often not differentiated from postocular row; palpi unusually dorsoventrally flattened, band-like; prosternum, prosternal membrane and propleuron bare; three *post ia* setae; 3 + 3 or 3 + 4 *dc* setae; two or three sternopleural setae; infrasquamal hairs present or absent; pteropleural seta present; fore coxa completely haired, or almost so, on its inner anterior surface; mid tibia with a *v* seta; hind coxa bare posterodorsally; hind tibia with a small (rather

inconspicuous) *pv* seta; wing with only a few setulae basally on R_{4+5} , veins otherwise bare; cell R_5 open to the wing margin; bend of vein M very sharp and with a conspicuous M_2 spur vein or fold; second costal sector bare or haired below; abdominal $Tr + 2$ excavate to its hind margin; ♂ hypopygium usually with some rather long strong setae visible in situ; sternites mainly or partly overlapped by tergites, but at least exposed at their apices.

Tribe LESKIINI

This tribe is in much need of a reclassification of the genera on a world basis, as the faunae of the Old World and New World regions contain forms that are virtually indistinguishable yet have not been associated in the same genera. The rich Neotropical fauna has been subject to excessive generic splitting, which has badly obscured the relationships existing within this local fauna and has made it difficult to relate the South American leskiines with Old World forms. This is unfortunate, as even a casual comparison shows that species occur in the Pacific islands and Australia, for example, that appear to be congeneric with New World forms. Bezzi (1928) placed a Fijian species in *Sipholeskia*, and Curran's Australian species *Demoticus certima* is here placed in the same genus after comparison with the type-species of *Sipholeskia*. Another of Bezzi's (1928) Fijian species, '*Rhinomyobia* *minuta*', is so closely similar to the Neotropical species *Myobiopsis diadema* (Wiedemann) that it ought perhaps to be assigned to *Myobiopsis* Townsend or one of the related South American genera, and the same comment applies to a small unidentified leskiine from Queensland that is exceedingly similar to *minuta* Bezzi (this species is run out in the key that follows as representing an unidentified genus).

In Australia and Tasmania the Leskiini are rather well represented, though at present most of the forms are undescribed and for several of them it is impossible at present to decide upon a suitable generic assignment. Six named and identifiable genera occur in the area, of which two are non-endemic (*Demoticoides* and *Sipholeskia*). The others – *Apatemyia*, *Toxocnemis*, *Exechopalpus* and *Rhinomyobia* – are endemic genera not found outside Australia and Tasmania (a careful comparison with Leskiini from other regions has shown that only *Rhinomyobia* has characters fitting closely with any extra-limital forms). Bezzi (1928) placed two Fijian species in *Rhinomyobia*, but Townsend (1939 : 300) is correct in stating that neither of them truly belongs in this genus; it may here be noted that Townsend (*loc. cit.*) is also right that *Rhinomyobia transversalis* Malloch is wrongly assigned to the genus (this species, from Queensland, is undoubtedly congeneric with '*Rhinomyobia* *plumifera*' Bezzi from Fiji but there appears to be no available generic name to apply to these species at present).

It is difficult to define the Leskiini with much precision, especially as the tribe contains a few species in which the prosternum is haired, or the propleuron is haired, and seemingly closely allied forms may or may not possess a *pv* apical seta on the hind tibia, and differ in the arrangement of the scutellar bristling. Typically, however, the tribe includes rather slender long-legged forms in which the epistome is projecting, the arista long-pubescent or plumose, the eyes bare, the *post dc* setae number three, the mediotergite lacks infrascapular hairs, the scutellum has only two

pairs of strong setae, the bend of vein *M* lacks an appendage, cell *R*₅ is open to the wing margin or only just closed, and there are two or three *stpl* setae. Some forms occur, less typical of their tribe, that have hairy eyes, four *post dc* setae, infrascapular hairs, and three pairs of scutellar setae. Pallid coloration and reddish yellow legs are rather commonly found in the group, and there is a tendency for the tibiae of the males of the really long-legged forms to become extremely slender and sinuous with associated reduction of the bristling (here it should be noted that the mid tibia in Leskiini appears always to possess a submedian *v* seta but that this is often extremely small in long-legged males).

The endemic genus *Exechopalpus* possesses extraordinarily long palpi, similar to those of the Neotropical genus *Spathipalpus* Rondani, and the proboscis itself is extremely slender. Throughout the Leskiini there is a marked tendency for the proboscis to be unusually slender, elongate, almost stylet-like, with the labellae correspondingly reduced, and even in forms in which the proboscis is short it is usually found that the mentum is parallel-sided in profile rather than convex on its lower edge.

The genus *Bezziomyobia* Baranov from the Solomon Islands has not been found in Australia, but is included in the following key to genera to show its main features. It is extremely close to *Demoticooides* Mesnil, and the latter ought perhaps to be sunk as a synonym of *Bezziomyobia* (it is beyond the scope of the present work to consider this further).

KEY TO AUSTRALIAN GENERA OF LESKIINI

- 1 Scutellum with only two pairs of strong marginal setae, the basals and subapicals; apical scutellar setae minute and hair-like or absent, if weakly developed then directed half-upwards. Subapical scutellar setae not inserted very widely apart, distance between their bases subequal to or less than that between a subapical seta and its corresponding basal seta 2
- Scutellum with three pairs of strong marginal setae, a pair of strong horizontal crossed apical setae present in addition to the basals and subapicals. Subapical scutellar setae inserted *very* widely apart, distance between their bases about twice as great as that between a subapical seta and its corresponding basal seta (or even more than this) 8
- 2 Palpi exceptionally elongate, length about equal to that of head at level of the epistome; palpi projecting beyond epistome by a distance about equal to the antennal length (when proboscis retracted). Fore tibia with some strong *ad* setae. Mid tibia with three or four strong *ad* setae and with three strong *p* setae. Hind tibia with a *pv* apical seta **EXECHOPALPUS** Macquart
- Palpi normal, length conspicuously less than that of head at level of the epistome; palpi not or only a little projecting beyond epistome (when proboscis retracted) (Text-fig. 41). Fore tibia without *ad* setae (a few inconspicuous *ad* setulae on basal half in *Rhinomyobia*). Mid tibia with one or two *ad* setae and nearly always with two *p* setae (some *Toxocnemis*-like forms with a very small third *p* seta basad of the normal two). Hind tibia without a *pv* apical seta (except in *Siphopleskia*) 3
- 3 Abdomen with T₁ + 2 excavate to its hind margin. Second costal sector bare ventrally. Humeral callus with three or more setae in line (sometimes not clearly differentiated from long hair). More robust forms with subovate or subconical abdomen 4

- Abdomen with $T_1 + 2$ excavate only on its basal half. Second costal sector haired ventrally. Humeral callus usually with only two strong setae (sometimes a weak third seta set forwards of main two or mesad of inner one of main pair). Slender forms with rather long narrow abdomen 7
 - 4 Pteropleuron with a strong pteropleural seta in addition to the hairing. Parafacials bare or at most haired only on upper half. Eyes bare or almost so. Infrascapular hairs absent. Arista bushy plumose or micropubescent 5
 - Pteropleuron without any seta in addition to the hairing. Parafacials fully haired. Eyes haired (hairing very short and sparse in some specimens). Infrascapular hairs present [careful examination needed]. Arista bushy plumose
- APATEMYIA** Macquart
- 5 Propleuron bare. Proboscis short, mentum shorter than eye-height and wider in profile than third antennal segment. Pleural regions of thorax with black hair. Hind tibia of both sexes with two *pd* setae 6
 - Propleuron haired. Proboscis very slender, mentum longer than eye-height and narrower in profile than third antennal segment. Pleural regions of thorax with yellowish white hair. Hind tibia of ♂ with one *pd* seta (unknown for ♀, possibly two *pd* in this sex)
- TOXOCNEMIS** Macquart
- 6 Parafacials totally bare. Arista with short bushy plumosity or long pubescence. Rows of frontal setae irregular at lower ends where frontal setae form a rather dense bunch on the profrons (especially in ♂). ♂ abdomen with long fine erect or semi-erect hairing. Intermediate abdominal tergites often with erect (rather variable) discal setae Undetermined genus
- [Running out here is a complex of forms with exactly similar appearance in most respects to *Toxocnemis* (head profile as Text-fig. 43) but differing by the characters shown in the key, most notably by having the propleuron bare. This complex will either require a new genus or will need to be placed in *Toxocnemis* on a redefined basis]
- Parafacials haired on upper half or at least with a few hairs immediately below the lowest frontal seta. Arista micropubescent (appearing almost bare at first glance). Frontal setae in one regular row on each side, not duplicated into a bunch of setae on the profrons. ♂ abdomen with short recumbent hair. Intermediate abdominal tergites without discal setae **RHINOMYOBIA** Brauer & Bergenstamm
 - 7 Wing vein R_{4+5} completely bare. Proboscis short, mentum much shorter than eye-height. Hind tibia without *pv* apical seta. Vibrissae level with epistomal margin. Fore tibia without *pd* setae. Hind tibia with one *pd* seta Undetermined genus
- [Running out here is an unidentified species seen from A.C.T. that cannot be satisfactorily assigned to a genus at present. The species is congeneric with '*Rhinomyobia*' *minuta* Bezzi from Fiji.]
- Wing vein R_{4+5} with several setulae on basal node and usually for some distance along the vein towards *r-m*. Proboscis long and very slender, mentum longer than height of the head. Hind tibia with a small *pv* apical seta. Vibrissae distinctly above level of epistomal margin. Fore tibia with some small *pd* setae or setulae distinct from the hairing. Hind tibia with two or more small *pd* setae **SIPHOLESKIA** Townsend
 - 8 Prosternum bare. Arista micropubescent. Eyes haired (hairing very short and inconspicuous in ♀). Abdominal T_5 with a transverse discal row of very strong setae in addition to the apical row. Humeral callus with the three main setae distinctly arranged in a triangle 9
 - Prosternum setulose. Arista with long plumosity. Eyes bare. Abdominal T_5 without a discal row of setae, only with apical setae. Humeral callus with the three main setae standing almost in a straight line New genus
- [Running out here are *Rhinomyobia transversalis* Malloch from Queensland and *R. plumifera* Bezzi from Fiji, together with some unnamed forms from New

Guinea, none of which correctly belongs in the genus *Rhinomyobia*. There appears to be no described genus to which these species can be correctly assigned, and a new genus will probably be needed for their appropriate placement.]

- 9 Mid tibia with two *ad* setae. Legs and palpi dark brown. [Solomon Islands]
BEZZIOMYIOBIA Baranov
 — Mid tibia with one *ad* seta. Legs (except tarsi) and palpi reddish yellow. [India & Queensland]
DEMOTICOIDES Mesnil
 [This genus is so similar to *Bezziomyobia* that the name ought perhaps to be treated as a synonym.]

Tribe ERNESTIINI

Four endemic Australian genera are here placed in this tribe, but it is doubtful whether the placements of two of them, *Neximyia* and *Amphitropesa*, will be upheld by further work. The affinities of these two genera are very obscure, and the fact that they are so far known only from very few female specimens makes it specially difficult to determine their true relationships; *Neximyia* at least appears to be rightly placed in the Tachininae, and probably does truly belong somewhere near the ernestiine-linnaemyine complex, but *Amphitropesa* is much more problematical and may not really belong in the Tachininae at all (its total facies, much reduced dorsal thoracic bristling, and strongly clubbed female palpi give it some resemblance to certain Proseninae).

The placement of *Chlorotachina* in Ernestiini appears to be almost certainly correct. In all its characteristics it conforms to the Ernestiini as the tribe is recognized in the Eurasian fauna, and the dark metallic blue-black or metallic greenish blue appearance of most forms conforms with that of similar metallic forms in the Palaearctic Region. The genus *Macrochloria*, although not immediately obvious as an ernestiine, is best placed in the Ernestiini as its characters closely accord with those of *Chlorotachina*.

The main characteristics by which *Chlorotachina* and *Macrochloria* concur with Eurasian Ernestiini are as follows: epistome very prominent, vibrissae inserted well above epistomal margin; parafacials bare; palpi moderately well developed; eyes densely long-haired; three postsutural *ia* setae (cf. *Parerigonini*); scutellum with four pairs of very strong marginal setae; mid tibia with more than one *ad* seta and both sexes with a *v* seta (♂ lacking a *v* seta in typical *Parerigonini*); hind coxa bare posterodorsally; wing with bend of vein *M* very sharp and provided with at least a trace of an *M*₂ stump or spur vein.

The genera *Neximyia* and *Amphitropesa*, here placed as a temporary measure in this tribe, do not conform with all of these characteristics, as will be evident from the following key to genera.

KEY TO AUSTRALIAN GENERA OF ERNESTIINI

- | | |
|---|---|
| 1 Eyes densely haired. Presutural acrostichal setae well developed. Prosternum haired (except in occasional specimen of <i>Macrochloria</i>). Wings clear hyaline | 2 |
| — Eyes bare (some very sparse short macroscopic hairs may be visible under high power). Presutural acrostichal setae absent or hair-like. Prosternum bare. Wings with the membrane partly brown and partly yellow | 3 |

- 2 Upper half of face raised medially into a definite ridge-like or knob-like keel beneath the antennae, the keel easily visible when head seen in profile. Abdomen with dense white pollinosity on each side of the last visible tergite (T₅), this tergite therefore contrasting in appearance with shining remainder of abdomen. Thoracic dorsum not shining **MACROCHLORIA** Malloch
- Upper half of face slightly swollen medially but not raised into a keel, face therefore almost completely invisible in profile. Abdomen entirely shining, if some whitish pollinosity present then rather evenly distributed and *very* inconspicuous. Thoracic dorsum distinctly shining **CHLOROTACHINA** Townsend
- 3 Parafacials bare. Propleuron bare. Wing with cell R₅ open at the wing margin. Form with remarkable pattern, as follows: dorsum of thorax very pale greyish yellow with six large strongly contrasting black marks (sublateral pair on prescutum and a lateral and a sublateral pair on scutum); abdominal dorsum black on T₁ + 2 and T₃ (except for pair of pale greyish yellow marks anteriorly on outer edges of T₃) and densely covered with pale greyish yellow pollinosity on T₄ and T₅, T₄ with three bold black spots (median spot and a pair of lateral spots that continue round to ventral surface). Apical half of wing irregularly smoky brownish, the brown colour nowhere sharply contrasting with hyaline areas **AMPHITROPESA** Townsend
- Parafacials haired (Text-fig. 45). Propleuron haired. Wing with cell R₅ closed at or a little before the margin. Without such pattern, but marked as follows: dorsum of thorax with shining black prescutum and scutum contrasting with yellow or orange scutellum, humeral calli and notopleura, the pale areas with pale golden pollinosity; abdomen bright orange with a broad black fascia across the middle covering T₄ and apical part of T₃, usually also three small black spots on T₅ and median depression of T₁ + 2 dark. Wing with a sharply defined but irregular brown cross-band, and with the membrane clear hyaline distally to the cross-band **NEXIMYIA** Crosskey

Tribe PARERIGONINI

This rare and aberrant group, first defined by Mesnil (1966 : 888), occurs in Eurasia, New Guinea and Australia. Its relationships with other tribes are at present very obscure, but the unusual modification of the male postabdomen, the unusual male genitalia, and the variously modified female terminalia, should shed some light on the true affinities when they are studied in detail. Superficially the New Guinea forms much resemble some Goniinae, and Australian forms like *Zita* have a general appearance, head facies and scutellar bristling much like some Proseninae; there is also some superficial resemblance to the Linnaemyini, mainly because of the prominent epistome and high vibrissae, and *Pygidimyia* has the colour and form much as in *Chaetophthalmus*. The Australian genera are known only from very few specimens, but these include representatives of some new species.

The main characteristics shown by the Australian Parerigonini are as follows. Epistome prominent and vibrissae inserted high above the epistomal margin; parafacials bare; genal dilation well developed; ♂ without proclinate orbital setae, ♀ with a pair of outwardly directed prevertical setae; inner vertical setae often convergent or crossing; upper occiput without black setulae behind the postocular row; prosternum bare; propleuron usually haired; humeral callus with three strong setae in a triangle, and one smaller seta set forwards of the inner two of the triangle; 3 (4) + 3 *dc* setae; 0 + 2 *ia* setae (the two *post ia* setae very strong and normally inserted in a position that suggests that a third *post ia* is never developed); three

or four *stpl* setae (2 + 1 or 3 + 1); infrasquamal hairs present; pteropleural seta present or absent; mid tibia *without* a *v* seta in the ♂, with a *v* seta in the ♀ [this sexual difference apparently constant to judge from limited material seen]; hind coxa bare posterodorsally; hind tibia without *pd* preapical seta and without *pv* apical seta; wing with only a few weak hairs on basal node of R_{4+5} , veins otherwise bare; cell R_5 open to the wing margin; bend of *M* rather abruptly angulate but without M_2 spur or fold; abdomen of both sexes unusual, in ♂ T_6 and $T_7 + 8$ exposed and forming a conspicuous vertical declivity at the end of the abdomen, and in ♀ postabdomen strongly developed and recurved with elaborately modified ovipositor (sometimes resembling that of some Phasiinae such as *Cylindromyiini*); abdominal sternites exposed.

The strange genus *Australotachina* Curran does not completely conform with the characters cited above, as it has sparse black hairs on the upper half of the occiput, has four post *dc* setae, the ♂ has a submedian *v* seta on the mid tibia, there is an extra pair of scutellar setae, and the bend of vein *M* is rather gently rounded, but it seems nevertheless best to place it with the parerigonines until its affinities can be more reliably determined; its head profile is shown in Text-fig. 42.

KEY TO AUSTRALIAN GENERA OF PARERIGONINI

- 1 Scutellum with three pairs of very strong setae (basals, subapicals and crossed apicals). 0 + 2 *ia* setae. Propleuron usually haired. 3 + 3 *dc* setae (occasionally weak fourth *prst dc* seta) 2
- Scutellum with four pairs of strong setae (a pair of enormous laterals present in addition to basals, subapicals and crossed apicals). 0 + 3 *ia* setae (a weak hair-like *post ia* seta present in front of the main two). Propleuron bare. 3 + 4 *dc* setae **AUSTRALOTACHINA** Curran
- 2 Abdomen with $T_1 + 2$ and T_3 normal, not fused, with excavation of $T_1 + 2$ reaching the hind margin. Baretted haired on anterior half. Posterior thoracic spiracle not exceptionally large, about as long as the baretted or only a little more. Both thoracic spiracles brown or blackish. Legs and all thoracic hair black 3
- Abdomen with $T_1 + 2$ and T_3 fused into a single very large composite tergite in which the excavation is confined to the basal part. Baretted bare. Posterior thoracic spiracle exceptionally large, very much longer than the baretted. Both thoracic spiracles pale yellowish. Legs reddish yellow (except for apical darkening of the tarsi) and hair of sides of the thorax golden orange or yellow **PYGIDIMYIA** Crosskey
- 3 Eyes densely and conspicuously hairy. Epistome usually only moderately prominent, vibrissae inserted above the epistomal margin by a distance not exceeding the length of the second antennal segment **LEVERELLA** Baranov
- Eyes bare or almost so (at most only with very sparse inconspicuous and microscopic hairs). Epistome strongly projecting, subnasute, vibrissae inserted above the epistomal margin by a distance exceeding the length of the second antennal segment (Text-fig. 46) **ZITA** Curran

Tribe LINNAEMYINI

The Linnaemyini include forms that are superficially very like the Tachinini but differ by having the dorsal surface of the hind coxa bare. All the Australian forms have the eyes densely haired, and this helps to separate them at a glance

from the Australian tachinines in which the eyes are always bare. Separate tribal status for Linnaemyini and Tachinini is in reality scarcely justified, but the Australian forms at least can be readily differentiated and separate tribal status is recognized for purposes of the present work. The following principal features are shared by the two groups: Epistome prominent or subnasute; vibrissae inserted well above level of epistomal margin; scutellum with similar bristling which usually includes erect subspiniform preapical setae; mid tibia with several *ad* setae and a submedian *v* seta; hind tibia with a *pv* apical seta; cell R_5 open; bend of vein M sharp and provided with an M_2 extension either as a definite spur vein or at least as a wing fold; pteropleural seta strong; abdomen with $Tr + 2$ excavate to its hind margin and with the sternites largely exposed; upper occiput without black setulae behind the postocular row.

Three genera are known from Australia, at least one of which (*Chaetophthalmus*) occurs also in Tasmania. This genus up to now was believed to be entirely Australian, but undescribed species are now available from New Guinea and New Caledonia. *Chaetophthalmus* is the dominant linnaemyine genus in Australia, and the other genera appear to be uncommon to judge from material so far known; one of these is the widespread Old World and North American genus *Linnaemya*, and the other is the monotypic genus *Apalpus* which is known only from South Australia and Western Australia. The three genera can only be reliably separated by the vestiture, or lack of vestiture, on the parafacials, and there is some doubt whether generic status is fully justified. It may be noted that they all have $3 + 3$ *dc* setae (Text-fig. 61) and in this respect differ from the tachinines in Australia which all have $4 + 4$ *dc* setae or more; the propleuron is always bare, and this character (as well as the hairy eyes) is useful in differentiating *Chaetophthalmus* from the tachinine genus *Microtropesa*, which has some superficial resemblance to it. All the Australian Linnaemyini have very reduced palpi.

KEY TO AUSTRALIAN GENERA OF LINNAEMYINI

- 1 Parafacials haired. Normally two *stpl* setae. $0 + 3$ *ia* setae [*prst ia* seta probably sometimes occurs but has not been seen]. Epistome extremely prominent and nasute. Vibrissae inserted very high above the epistomal margin, distance from insertions to level of the epistomal margin as great as or greater than the length of the second antennal segment. Prosternal membrane and anterior part of prosternum usually finely haired (hairs if present may be pale and very inconspicuous). Abdomen rather rotund, appearing noticeably wider than thorax to naked eye 2
 - Parafacials bare. Normally three *stpl* setae. $1 + 3$ *ia* setae [*prst ia* seta probably sometimes absent]. Epistome prominent but not strikingly nasute. Vibrissae inserted above the level of the epistomal margin by a distance less than the length of the second antennal segment. Prosternal membrane and prosternum bare. Abdomen more elongate, not noticeably wider than thorax to naked eye
- LINNAEMYA** Robineau-Desvoidy
- 2 Parafacials without any strong setae in addition to the hairing (Text-fig. 44)
- CHAETOPHTHALMUS** Brauer & Bergenstamm
- Parafacials each with one strong incurved seta near the lower end in addition to the hairing (see fig. 17 in Malloch, 1929b : 316) **APALPUS** Malloch

Tribe TACHININI

In Australia the Tachinini are represented mainly by the endemic genus *Microtropesa*, which is readily distinguished from other tachinine (except *Paratropeza* Paramonov) genera by the possession of long dense hair on the pleurotergite (the supraspiracular convexity just dorsal to the hind thoracic spiracle). This genus includes several distinctive species with patterned abdomen and smoky brown and yellow wings, but also some species of more humdrum appearance. The only two other genera known in Australia are non-endemic, *Cuphocera* occurring very widely throughout the Old World and *Eristaliomyia* in the south-east Asian archipelago, Malaya and New Guinea (the latter genus is probably confined in Australia to the Northern Territory and Queensland); *Eristaliomyia*, it should be noted, is very closely allied to the genus *Servillia* Robineau-Desvoidy (which is abundantly represented throughout the Oriental Region) and perhaps ought not to be recognized as a valid genus. In general, the tachinine fauna of Australia is rather impoverished, in contrast to that of the Palaearctic and Oriental Regions where it is so richly developed.

The genera represented in Australia have the following features in common that aid in tribal recognition. Parafacials covered with long fine hair; second antennal segment unusually elongate (and the third not or hardly longer than the second); vibrissae inserted far above epistomal margin; eyes bare; epistome very strongly projecting; prosternum bare; 4 + 4 *dc* setae (Text-fig. 62) (sometimes with additional *dc*); scutellum often with erect spiniform setae or setulae just before the apex; no infrascapular hairs; mid tibia with many *ad* setae and with a *v* seta; hind tibia with a strong *pv* apical seta; hind coxa haired on the posterodorsal surface; basal node of R_{4+5} with only a few weak hairs, veins otherwise bare; second costal sector bare below; cell R_5 open; strong pteropleural seta (often doubled); abdomen with $T_1 + 2$ excavate to hind margin; abdominal sternites exposed and bearing stiff, often spiniform, setae; bend of vein *M* abrupt and with a weak fold extending at least slightly from the bend towards the wing margin.

KEY TO AUSTRALIAN GENERA OF TACHININI

- 1 Parafacials without strong setae in addition to the hair. Propleuron haired.
 $1 + 2$ *ia* setae. Palpi well developed (though sometimes very slender). ♂ without
 proclinate orbital setae 2
- Parafacial armed with two or three strong setae (standing on lower end near the eye).
 $1 + 3$ *ia* setae. Palpi vestigial. ♂ with or without proclinate orbital setae
CUPHOCERA Macquart
- 2 Convexity above posterior thoracic spiracle (pleurotergite) bare. Three strong
 supra-alar setae. One sternopleural seta [$0 + 1$ *stpl* in specimens seen, possibly not
 constant]. Parafrontals shining black. Forms with bee-like facies and unusually
 short wings **ERISTALIOMYIA** Townsend
- Convexity above posterior thoracic spiracle (pleurotergite) with dense vestiture of
 long hair. Two or three sternopleural setae. Parafrontals yellow to dark reddish
 orange. Forms without such facies and with wings not unusually short in relation
 to body size **MICROTROPESA** Macquart

SUBFAMILY GONIINAE WITH KEYS TO THE TRIBES AND GENERA

This enormous subfamily includes the forms commonly thought of as the 'higher Tachinidae', and many of them have the pre-alar seta very large; this character

appears clearly to be a derived (apomorphic) one, and is not found to the same degree elsewhere in the Tachinidae. Some authors have in the past recognized two subfamilies within the group, the Exoristinae (= Tachininae sensu van Emden) with a small pre-alar seta, and the Goniinae with a large pre-alar seta, but specialists now seem agreed that it is only justified to recognize all as a single subfamily (Goniinae); the group as a whole is rather uniform in the genital structure of the males and intermediate forms exist between the more typical elements of the exoristines and the goniines on external characters. The external facies within the Goniinae is extremely diverse, though not to the extent shown by the Tachininae, and it is not easy to define the subfamily (especially as it is not unified by parasitizing only one order of insects, the hosts including forms as diverse as adult beetles, larval Lepidoptera and grubs of paper-making wasps). Nevertheless the following characteristics of the external adult morphology are typical of the subfamily and help towards defining it.

Head without a facial carina; head of ♂ never holoptic and uppermost eye facets not enlarged; rows of frontal setae descending usually to about on a level with the middle of the second antennal segment; reclinate orbital setae nearly always present, ♀ rarely with outwardly directed prevertical setae; inner vertical setae normally subparallel (very rarely crossing); vibrissae well developed; arista normally micropubescent, rarely plumose; palpi almost always fully developed (papilliform in some species of *Stomatomyia*, *Spoggosia*, etc.); thoracic and abdominal chaetotaxy usually strongly developed; prosternum haired or setulose (bare in a few forms, especially in *Blondeliini*); prosternal membrane bare; humeral callus with two or more setae; at least 2 + 2 *dc* setae, usually more; normally three *post ia* setae (two only in a few forms or aberrant specimens); pre-alar seta present, small or large; two or more *sa* setae, though hind one sometimes weak; postalar callus with two setae; scutellum with at least two pairs of marginal setae; 2-4 (5) *stpl* setae; infrasquamal hairs almost always absent (present at least in a few *Blondeliini*); fore coxa bare on much of its inner anterior surface; mid tibia with or without a submedian *v* seta; hind coxa almost always all bare posterodorsally, but a few forms (such as many *Carcelia* spp.) with one or two fine setulae; hind tibia almost always without *pv* apical seta, usually with two dorsal preapical setae but sometimes with a *pd* preapical seta in addition; abdomen with *Tr* + 2 excavate to its hind margin (a few exceptions including all *Siphonini*); sternites of the abdomen normally concealed or mainly so; hair of lower half of the occiput and the postbuccae always pale.

Some of the tribes here accepted are very weakly defined and probably ought not to be recognized as valid, but it is best to treat them as valid until a better classification can emerge from a large-scale study on a world basis using new or improved criteria. This comment applies particularly to the *Carceliini*, *Sturmiini*, *Winthemiini* and *Eryciini*, which merge rather imperceptibly into one another and are only separable on rather unconvincing grounds.

Herting (personal communication) considers that the multifarious genera of the *Goniini*-*Carceliini*-*Sturmiini*-*Eryciini* complex should be aggregated into two tribes (for which the names *Eryciini* and *Goniini* would be nomenclaturally correct) according to whether they have an ovolarviparous or a microoviparous reproductive habit. Such a course has much to commend it insofar as it would probably reflect the real phylogeny more accurately than the present tribal system. But it is impossible to adopt such a system as yet for the Australian fauna, in which the reproductive habit of most of the genera remains unstudied. Furthermore,

a separation into two tribes on the basis of the reproductive habit presents practical difficulties of identification (since the external adult morphology of the genera included in the redefined Goniini and Eryciini would not allow clear diagnosis, nor would it lend itself to tribal key construction).

KEY TO AUSTRALIAN TRIBES OF GONIINAE

- 1 Pre-alar seta long and strong, longer than the first *post ia* seta and usually longer than the first *post dc* seta (except in *Bactromyiella*). Sternopleuron often with four *stpl* setae. Second costal sector bare ventrally. Subapical scutellar setae never converging to enclose the apicals 2
- Pre-alar seta small and weak, shorter than the first *post ia* seta (except in *Phorocerosoma*) and normally much shorter than the first *post dc* seta. Second costal sector bare or haired ventrally. Sternopleuron with fewer than four *stpl* setae. Subapical scutellar setae sometimes convergent and enclosing the apicals 7
- 2 Ocellar setae reclinate. Scutellum with a pair of stiff erect divergent preapical setae. Frons very wide in both sexes, ♂ with outer vertical setae like the ♀. Eyes bare. 3 + 4 *dc* setae **GONIINI** (p. 96)
- Ocellar setae proclinate or absent (slightly divaricate in *Paragonia*). Scutellum usually without stiff erect preapical setae just before the tip. Frons usually not exceptionally wide, ♂ rarely with distinct outer vertical setae. Eyes bare or haired. Various complements of *dc* setae 3
- 3 Eyes relatively very large so that the gena is reduced to a narrow strip below the eye that is not as wide as the profrons (Text-figs 48, 52 & 53) 4
- Eyes occupying relatively less of the side of the head, gena usually at least slightly wider than the profrons (when doubtful check *Winthemiini*), often conspicuously so (Text-figs 50 & 51) 5
- 4 Propleural seta present. Legs blackish brown or mainly so, basicosta usually dark (yellowish in a few forms). [Parasites of Lepidoptera] **CARCELIINI** (p. 89)
- Propleural seta absent (except in *Koralliomyia*). Legs uniformly pale orange-yellow or at most only femora brown, basicosta clear yellow-orange. [Parasites of vespid wasps] **ANACAMPTOMYIINI** (p. 90)
- 5 Barettae completely haired. Humeral callus with five strong setae (at least in the ♂) of which the three main ones stand in a triangle. Eyes densely haired. Hind tibia of ♂ with a long close-set *ad* fringe. ♂ without definite reclinate orbital setae. Scutellum with strong horizontal crossed apical setae *and* with the subapical setae inserted far apart (distance between their bases at least as great as that between a subapical seta and its corresponding basal seta) (Text-fig. 72) **WINTHEMIINI** (p. 88)
- Barettae only haired at its anterior end (some exceptions: fully haired in *Bactromyiella*) or entirely bare. Humeral callus with fewer than five setae, normally three setae in a straight line and a fourth seta set forwards of the basal line of three (sometimes only three setae in line or in a triangle). Eyes bare or haired. Hind tibia with or without such fringe in the ♂. Arrangement of scutellar setae varied, as above only in a few *Sturmiini* 6
- 6 Vibrissae inserted at a level distinctly above the epistomal margin (rarely only slightly above). Always 3 + 4 *dc* setae. Inner posterior angle of the lower calypter well developed, and inner margin of lower calypter abutted closely against the scutellum. ♂ often with well developed close-set *ad* fringe on hind tibia and sometimes with dense secondary sexual hair fascicles on venter of abdominal T₄ **STURMIINI** (p. 91)

- Vibrissae usually inserted about on a level with the epistomal margin (if above then other character not fully fitting or doubtfully so). Dorsocentral setae sometimes 3 + 4 but other complements occurring. Inner margin of lower calypter usually not closely following edge of scutellum, inner posterior angle of the calypter usually rather rounded. ♂ without a regular close-set hind tibial fringe and without abdominal hair fascicles **ERYCIINI** (p. 96)
- 7 Scutellum with three pairs of very strong setae in which the apical setae are crossed and horizontal and the subapical setae are very wide apart and inserted well forwards on the sides of the scutellum (Text-fig. 68); no lateral scutellar setae. Basal node of R_{4+5} with one strong setula. Parafrontals in both sexes with a long series of strong proclinate orbital setae. Antenna with the anterior tip of the third segment forming a sharp point. Bend of vein M widely obtuse, M_1 unusually straight and cell R_5 normally closed at the wing margin or short petiolate (Text-fig. 88). Second costal sector haired ventrally. 2 + 3 dc setae. [Parasites of Orthoptera Acridoidea] **ACEMYINI** (p. 78)
- Scutellum almost always with different conformation of setae, lateral setae usually present; if scutellar bristling similar then other characters not fitting. Basal node of R_{4+5} with more than one isolated setula (except in Neaerini and a few Blondeliini). Parafrontals with the usual two pairs of proclinate orbital setae in ♀, without or with two pairs in ♂. Antenna not noticeably mucronate, outer tip of last segment usually rounded. Wing venation of different form (slightly similar in some Blondeliini). Second costal sector haired or bare below. Varied complements of dc setae. [Not parasites of Orthoptera Acridoidea, except possibly *Phorocerosoma*] 8
- 8 Subapical scutellar setae strongly convergent or crossing at their apices (Text-figs 67 & 69). Second costal sector haired below (third sector also usually haired ventrally on most of its length). Costal margin conspicuously broken and incised at the apex of the subcosta (Sc) (Text-figs 86 & 89). Abdominal $T1 + 2$ not excavate to its hind margin 9
- Subapical scutellar setae parallel to each other or diverging (e.g. as in Text-fig. 71). Second costal sector bare below (except in *Lixophaga*). Costal margin inconspicuously broken and scarcely at all incised at the apex of Sc . Abdominal $T1 + 2$ usually excavate to its hind margin (not in some Blondeliini or in *Hillomyia*) 10
- 9 Abdomen without discal setae on any tergite. Propleuron bare. Head not sexually dimorphic, ♂ with two pairs of proclinate orbital setae and with outer vertical setae like the ♀. Vein R_{4+5} extensively setulose and R_1 usually also partly or wholly setulose. Eyes bare. Hind tibia with three dorsal preapical setae (pd preapical present in addition to the usual ad and d preapicals) (Text-fig 18) **SIPHONINI** (p. 80)
- Abdomen with strong erect discal setae on tergites 3 to 5. Propleuron haired. Head sexually dimorphic, frons much narrower in ♂ than ♀ and male head without proclinate orbital setae or definite outer vertical setae. Vein R_{4+5} with one setula only or a small tuft of setulae confined to the basal node, R_1 bare. Eyes haired (but hairing very short and inconspicuous in some forms). Hind tibia with two dorsal preapical setae (the normal ad and d preapicals) (Text-fig. 19) **NEAERINI** (p. 78)
- 10 Bend of vein M in the form of an open evenly rounded curve (as in Text-fig. 85) or if slightly abrupt then forming a widely obtuse angle, always without trace of an M_2 appendix or fold. Propleuron bare or haired. Infrascapular hairs present or absent. Abdominal $T1 + 2$ excavate or non-excavate to its hind margin. Mid tibia with or without a submedian v seta **BLONDELIINI** (p. 81)
- Bend of vein M abrupt and not forming a widely obtuse angle (M changing direction usually at about 90° at the actual bend), often provided with an M_2 appendix or

- fold in the wing surface (Text-fig. 87). Propleuron bare (except in *Hillomyia*). Prosternum always haired or setulose. Infrascapular hairs always absent. Abdominal $T_1 + 2$ excavate to its hind margin (except in *Hillomyia*). Mid tibia always with a submedian *v* seta II
- II Lower calypter normal, outer edge not bent downwards. Bend of vein *M* nearly always with at least a trace of an M_2 appendix or at least a darkened fold in the wing membrane continuing towards the wing margin (Text-fig. 87). Eyes bare or haired. Three or four *post dc* setae. Barete usually haired only at its anterior end **EXORISTINI** (p. 85)
- Lower calypter bent abruptly downwards on its outer margin (except in *Mycteromyiella*). Bend of vein *M* without trace of M_2 appendix or fold. Eyes densely haired. Four *post dc* setae. Barete fully haired. **ETHILLINI** (p. 87)

Tribe **ACEMYINI**

This is a small but nearly cosmopolitan tribe in which all the known hosts are Orthoptera of the families Acrididae s.l. and Eumastacidae. The scutellar bristling is distinctive among the Goniinae (Text-fig. 68) and comprises three pairs of very strong setae, an apical crossed pair, a subapical pair set unusually far forwards on the sides of the scutellum and a basal pair. Most forms have a long series of proclinate orbital setae in both sexes and many have the outer tip of the third antennal segment formed into a rather sharp point, these features helping towards instant recognition of the group; the basal node of vein R_{4+5} has only one extremely strong setula on both surfaces of the wing, a feature that is relatively uncommon in goniines, although found in the Neaerini. Only the single genus *Ceracia* Rondani (syn. *Myothyria* Wulp) is known in Australia, and this is distinguished from other acemyine genera by the following combination of characters: prosternum setulose; head with proclinate orbital setae in both sexes; hind tibia without *pv* apical seta (cf. *Acemya* Robineau-Desvoidy); humeral callus with three setae; cell R_5 closed at or just before the wing margin (Text-fig. 88); two sternopleural setae; bend of vein *M* rather abrupt and very remote from wing margin (Text-fig. 88); $2 + 3$ *dc* setae; vibrissae above the level of the epistomal margin; basicosta reddish yellow; third antennal segment distinctly mucronate; head with inner eye margins strongly diverging ventrally, parafacials not or hardly contracted at their lower ends.

Tribe **NEAERINI**

The Australian fauna contains several little known forms that are clearly very closely allied to the genus *Tongamyia* Mesnil from Tonga and Fiji, and the resemblance is indeed so complete that *Voriella* Malloch and *Tongamyia* ought probably to be placed as synonyms (this is not considered further in the present work as *Voriella* is the older name and would not have to be changed in the event of synonymy). It is pertinent, however, that Mesnil (1960 : 649, footnote) associates *Tongamyia* with the neaerines and the genus *Neaera* Robineau-Desvoidy, and placement of *Tongamyia* in the Neaerini appears very reasonable on present evidence. As *Voriella* is virtually indistinguishable from *Tongamyia* it, too, is here assigned

to Neaerini. (The only noteworthy difference between *Voriella* and *Tongamyia* lies in the vestiture of the hind coxa, as indicated in the key that follows.)

Voriella and its allies have the following main features in common. ♂ without proclinate orbital setae and with such fine straight reclinate orbital setae that they appear to form a continuous row with the frontal setae; ♀ with one pair of reclinate orbital setae (sometimes slightly twisted outwards); vibrissae level with epistomal margin; frontal setae descending far down on the parafacials (sometimes to a level below the mid-point) and in ♂ the rows irregularly duplicated at the lower ends; upper occiput with some black setulae behind postocular row; normally 2 + 3 *dc* setae (3 + 3 occurring, perhaps aberrantly); 1 + 3 *ia* setae; 2 *stpl* setae; scutellum with only two pairs of strong setae, the basals and subapicals, the latter meeting or crossing at their tips; propleuron haired; infrasquamal hairs absent; mid tibia with a submedian *v* seta; mid tibia with one or two *ad* setae; hind tibia without *pd* preapical seta and with or without a very small *pv* apical seta; second costal sector haired ventrally; costal spine long; distance on vein *M* from bend to *m-cu* as great, or nearly so, as that from *m-cu* to *r-m* (Text-fig. 86); costa of ♂ often with long fine ventromarginal hair on basal part; basal node of R_{4+5} most often with only one strong setula above and below, sometimes with a hair tuft; abdomen with $T_1 + 2$ not excavate to hind margin and with very strong erect discal setae on T_3 - T_5 .

In addition to the type-species, Malloch described two other Australian species (viz. *inconspicua* and *armiceps*) that he placed in *Voriella*; neither correctly belongs in the genus or in the Neaerini.

An undescribed species with haired parafacials has been seen from South Australia, and another with the characters of *Tongamyia* but with 3 + 3 *dc* setae has been seen from New South Wales. Both differ slightly from either *Voriella* or *Tongamyia* and their generic placement is uncertain at present. They have been placed, however, in the following key so that the differential features can be seen easily. There are evidently more forms yet to be discovered in Australia in this interesting and little-known complex. Probably when studied sufficiently it will be concluded that all should be treated as congeneric, and the definition of *Voriella* widened accordingly.

The BMNH collection contains an undescribed species of Neaerini from Queensland that differs from all the other Australian Neaerini so far known by having the wing cell R_5 exceedingly long-petiolate. This species is very small (length only about 2.5 mm) but differs from *Tongamyia* only by the petiolate cell R_5 . The species will either require a new genus (if the long petiole is considered a sufficient generic character) or will have to be placed in *Tongamyia* with the necessary widening of the definition of the latter.

The affinities of the Neaerini appear to lie with the Siphonini, a tribe which Herting (personal communication) considers should be assigned to the Tachininae. Future work may well demonstrate that the neaerines also should be placed in the Tachininae, and possibly also that the tribe should be merged with the Eloceriini (=Helocerini of authors). In the latter event the correct tribal name would be Eloceriini.

KEY TO AUSTRALIAN GENERA OF NEAERINI

- 1 Wing with cell R_5 closed far before the wing margin, the petiole very long (longer than either the second costal sector or M_1) [Queensland] . . . Undescribed sp., ? gen. n.

- Wing with cell R_5 open or at most only just closed at the wing margin 2
- 2 Parafacials with a row of strong black hairs or setulae (curving downwards). Basal node of vein R_{4+5} with several long hairs or fine setulae on upper and lower surfaces, those of lower surface often forming a definite tuft [South Australia] Undescribed sp., ? gen. n.
- Parafacials bare (apart from the strongly descending frontal setae). Basal node of vein R_{4+5} usually with only one long strong setula on upper and lower surfaces, at most only two minute hairs in addition to the main setula 3
- 3 Mid tibia with one submedian *ad* seta. Hind coxa bare on posterodorsal margin. 2 + 3 *dc* setae [Fiji, Tonga, Samoa] *TONGAMYIA* Mesnil
- Mid tibia with two *ad* setae (a definite small *ad* seta present just basad of the main one). Hind coxa bare or setulose on posterodorsal margin. 2 + 3 or 3 + 3 *dc* setae [Australia] 4
- 4 Hind coxa with black setulae on the posterodorsal margin. 2 + 3 *dc* setae. Fore tibia with two *pv* setae (basal one weak) [widespread eastern Australia] *VORIELLA* Malloch
- Hind coxa bare on the posterodorsal margin. 3 + 3 *dc* setae (a third *prst dc* seta present between the main two and almost equally strong: ? aberrant). Fore tibia with one *pv* seta [may not be constant when more material known] [New South Wales] Undescribed sp.

Tribe SIPHONINI

(Actiini)

The cosmopolitan tribe Siphonini is the most distinctive in the Goniinae, and the Australian forms can be instantly recognized by their characteristic facies. This derives primarily from the following features: size very small (length about 3–4 mm, smallest Australian Tachinidae on average); head not sexually dimorphic (the sexes therefore rather difficult to recognize as both males and females have an equally broad frons, two pairs of proclinate orbital setae and strong outer vertical setae); scutellum with subapical setae convergent and usually crossing towards the tips (Text-fig. 67); pre-alar seta minute; legs rather short and with rather stiff setae (hind tibia unusual in having three strong preapical setae on upper surface – i.e. *ad*, *d* and *pd* preapicals – as shown in Text-fig. 18); abdomen without discal setae on any segment and with $T_1 + 2$ excavate only on its anterior half; wings short and broad with costal margin deeply incised at apex of *Sc* and with bend of vein *M* unusually remote from cross-vein *m-cu* (Text-fig. 89); wing veins more extensively setulose than in other goniines.

The Australian distribution includes Tasmania, and there are three genera represented in the area. The most notable absentee is the genus *Siphona* Meigen, which although represented by at least one species in New Guinea has not yet been found in Australia. This genus is not included in the key as, if found later in Australia, it will be immediately recognisable by the extremely long slender angled proboscis that is at least as long as the head height (all genera known in Australia have a short inconspicuous proboscis).

It is necessary to note here some changes in nomenclature of Australian siphonines. Crosskey (1966b) applied the generic name *Strobliomyia* Townsend to several Australian species, using the nomenclature given by Mesnil (1963). Mesnil noted two older names for *Strobliomyia*, viz. *Herbstia* Robineau-Desvoidy and *Peribaea* Robineau-Desvoidy, but considered that they were both preoccupied and therefore that *Strobliomyia* was the valid name. Mesnil was right about *Herbstia* Robineau-

Desvoidy which is preoccupied by *Herbstia* Edwards but wrong about *Peribaea* which is not preoccupied. The valid name for the genus previously called *Strobliomyia* is now, therefore, *Peribaea*. Mesnil (1963: 803) placed the names *Schizoceromyia* Townsend and *Schizactiana* Curran as synonyms of *Strobliomyia* (= *Peribaea*) but these synonymies are in error; the type-species of *Schizoceromyia* and *Schizactiana* have been examined, and neither has the strong downwardly directed prostigmatic seta that characterises *Peribaea*; on the contrary, both type-species have all the essential characters of *Ceromya* Robineau-Desvoidy, and the names *Schizoceromyia* and *Schizactiana* are therefore moved into new synonymy with *Ceromya*.

Some species of *Peribaea* have the third antennal segment deeply cleft in the male, and a bifid male third antennal segment occurs in *fergusoni* Bezzi and *valida* Curran (the type-species of *Schizoceromyia* and *Schizactiana* respectively). Mesnil's placement of *Schizoceromyia* and *Schizactiana* in synonymy with *Peribaea* (as *Strobliomyia*) was evidently due to this feature – as the type-species were known to him only from descriptions, which did not mention the prostigmatic setae. It is now clear that forms with bifid or ramose male third antennal segments occur in both *Peribaea* and *Ceromya* – and indeed also in *Actia* (in which *A. baldwini* is one such species). Cleaving of the third antennal segment is extremely rare in the Australian tachinid fauna, and these siphonines are the only described Australian forms in which such a characteristic occurs.

The Siphonini are here placed in their traditional position, but there are reasons for thinking that they would be better placed in the Tachininae – notably certain features in the larval morphology (Herting, personal communication).

KEY TO AUSTRALIAN GENERA OF SIPHONINI

- 1 Thorax with two strong subequal prostigmatic setae, one directed upwards and the other downwards (Text-fig. 8). Wing with sixth vein extending to wing margin. Mid tibia with one strong *ad* seta **PERIBAEA** Robineau-Desvoidy
- Thorax with one strong prostigmatic seta, directed upwards. Wing with sixth vein usually stopping short of wing margin (occasionally traceable to margin as weak fold). Mid tibia with or without an *ad* seta 2
- 2 Sternopleuron with a regular row of fine hairs in front of the mid coxa (Text-fig. 15). Lowermost sternopleural seta very weak and placed about as far from the mid coxal base as from the upper anterior sternopleural seta [condition not known for all included species] **ACTIA** Robineau-Desvoidy
- Sternopleuron completely bare laterally in front of the mid coxa. Lowermost sternopleural seta either very strong and placed very near the mid coxal base or (in *fergusoni*) undeveloped so that there are only two sternopleural setae [condition not known for all included species] **CEROMYA** Robineau-Desvoidy

Tribe BLONDELIINI

This tribe contains a very large number of genera each with relatively few species. There is great diversity of body form and chaetotaxy within the group, but it is usually possible to recognize the blondeliines reliably among the goniines by the possession of three main features in combination, viz. pre-alar seta small or minute

(weaker than first *post ia* seta), subapical scutellar setae extremely strong and divergent (with the apicals very weak and often absent) (Text-fig. 71), and the bend of vein *M* forming an evenly rounded curve (Text-fig. 85). Some forms occur that do not completely fit with these criteria, but they are nevertheless very helpful in practical recognition of the group; some forms may have fairly well developed apical scutellar setae, and a very few (such as the Australian *Paropsivora*) have a rather abruptly angulate vein *M*. The tribe is nearly cosmopolitan, and is well represented in Australia and Tasmania (whence many undescribed forms exist in collections in addition to the identifiable genera and species). The hosts of many blondeliines are beetles or sawfly larvae, insect groups that much less commonly provide hosts for the other tribes of Goniinae.

Some of the Blondeliini with black coloration and slender elongate bodies and legs are strongly reminiscent of the Minthoini and it seems possible that there is a much closer affinity between blondeliines and minthoines than has been supposed or that some forms are erroneously classified in the Blondeliini (e.g. the tropical genus *Eophyllophila* Townsend). This genus occurs in New Guinea but has not been found in Australia, but black-and-yellow forms of the genus *Trigonospila* (which is evidently a close relative of *Eophyllophila*) are found in Australia. Other blondeliines, such as *Froggattimyia*, have very much the facies of Sturmiini and the existence of such forms as well as minthoine-like forms in the same tribe makes it difficult for the non-specialist to recognize the tribe on general appearance; but at least virtually all the members, whatever their naked-eye facies, share the three main characteristics already noted.

Another noteworthy character found in many blondeliines is hairing on the propleuron. This occurs in several quite different groups of blondeliines, but almost never in other tribes of Goniinae (in which the propleuron is bare except in *Hillomyia*). It is therefore a useful rule-of-thumb when identifying Australian tachinids that any goniine specimen with a haired propleuron belongs in the Blondeliini. The Australian fauna is rich in forms with haired propleuron and contains one notoriously difficult complex in which the supposed genera merge rather imperceptibly into one another. This complex includes *Anagonia* and related forms and is currently under study by Dr Donald Colless.

Very nearly all species of the enormous subfamily Goniinae have the prosternum haired or setulose (or at least one pair of prosternal setulae) but some blondeliines are atypical members of the Goniinae and have the prosternum totally bare. In Australia such forms include the genera *Trigonospila* and *Zosteromeigenia*, which (excepting rare aberrant specimens of other genera) are the only Australian Goniinae, apart from the sturmiine genus *Blepharella*, to have a bare prosternum.

About half of the genera of Blondeliini so far known from Australia are endemic, but this proportion is likely to rise when the fauna is better known. The non-endemic genera occur widely in Eurasia and at least two (*Compsilura* and *Trigonospila*) are found also in tropical Africa. *Lixophaga* is mainly a New World genus but has at least two species (one undescribed at present) in New Guinea; the described species, *L. sphenophori*, was introduced into Queensland and is apparently established there. The New Guinea blondeliines have not been worked out, but the genera

Eophyllophila Townsend and *Prodegeeria* Brauer & Bergenstamm certainly occur in the territory and may perhaps be found ultimately in Queensland.

The genus *Bactromyiella* is very anomalous, but may perhaps be a blondeliine. It has a small *pra* seta (smaller than the first *post ia* seta) and the bend of vein *M* is evenly rounded as in typical Blondeliini, but the subapical scutellar setae are parallel (not strongly divergent as is usual in blondeliines); the facies of *Bactromyiella* is not especially blondeliine, but is more that of a winthemiine or eryciine. The genus is kept tentatively in the Eryciini but is included also in the following key to blondeliine genera.

KEY TO AUSTRALIAN GENERA OF BLONDELIINI

- 1 Mid tibia without a submedian *v* seta 2
- Mid tibia with a submedian *v* seta 3
- 2 3 + 4 *dc* setae. Prosternum haired. Scutellum with subparallel subapical setae and with apical setae. Intermediate abdominal tergites without discal setae. ♂ with velvety black thorax contrasting with bright orange or orange-red abdomen (except T₁ + 2 black) [**BACTROMYIELLA** Mesnil, tribe Eryciini]
- 2 + 3 *dc* setae. Prosternum bare. Scutellum with widely diverging subapical setae and without apical setae. Intermediate abdominal tergites with strong erect discal setae. ♂ without such coloration **TRIGONOSPILA** Pokorný
- 3 2 + 2 *dc* setae (sometimes a very small additional *post dc* setula between the two main setae). Second supra-alar seta absent. Humeral callus with two setae. Wing with distance on vein *M* from the bend to *m-cu* as great as that between *m-cu* and *r-m*. Basal node of *R*₄₊₅ bare or with one minute hair. Two sternopleural setae. Abdomen with T₁ + 2 not excavate to its hind margin 4
- More than 2 + 2 *dc* setae (2 + 3 or 3 + 3 or 3 + 4, occasionally 2 + 4). Second supra-alar seta present. Humeral callus with three or more setae. Wing with distance on vein *M* from the bend to *m-cu* conspicuously less than that from *m-cu* to *r-m*. Basal node of *R*₄₊₅ with at least two hairs or setulae. Two or three sternopleural setae. Abdomen with T₁ + 2 excavate to its hind margin (except in *Lixophaga* and *Lecanipa*) 5
- 4 Propleuron bare. ♂ with one pair of strong erect discal setae on each abdominal tergite from T₃ to T₅, ♀ without abdominal discal setae. ♂ without proclinate orbital setae. ♀ with ovipositor in form of a long strong downcurved hook easily seen in profile. ♀ hind coxa with apicoventral setae modified into short blunt black pegs **MEDINODEXIA** Townsend
- Propleuron sparsely haired. Both sexes without abdominal discal setae. ♂ with two pairs of proclinate orbital setae (like the ♀). ♀ with very short broad flattened ovipositor that is not visible in profile. ♀ hind coxa with apicoventral setae not so modified **MONOLEPTOPHAGA** Baranov
- 5 Propleuron bare. Vibrissae inserted about on a level with the epistomal margin. Parafacials bare (except in *Pareupogona*). Infrascapular hairs sometimes present 6
- Propleuron haired. Vibrissae usually inserted at a level distinctly above the epistomal margin. Parafacials usually entirely haired or haired at upper ends, seldom entirely bare. Infrascapular hairs absent 10
- 6 Fore tibia with two *pv* setae. Intermediate abdominal tergites with discal setae. Second costal sector bare ventrally. Hind tibia without a *pd* preapical seta. Humeral callus with the three main setae standing in a straight line (except in *Lecanipa*). ♂ without proclinate orbital setae 7
- Fore tibia with one *pv* seta. Intermediate abdominal tergites without discal

- setae. Second costal sector haired ventrally. Hind tibia with a distinct *pd* preapical seta in addition to the normal *ad* and *d* preapicals. Humeral callus with three setae standing in a triangle. ♂ with two pairs of proclinate orbital setae (like the ♀) **LIXOPHAGA** Townsend
- 7 Eyes bare. Parafacials finely and sparsely haired. Facial ridges finely setose on lower two-fifths or half. Mid tibia with two *ad* setae **PAREUPOGONA** Townsend
- Eyes densely haired. Parafacials bare. Facial ridges with strong downcurved setae on most of their height. Mid tibia with one or two *ad* setae 8
- 8 Mid tibia with one submedian *ad* seta. 3 + 4 *dc* setae. Abdominal T₁ + 2 excavate to its hind margin. Humeral callus with the three main setae standing in line. Infrascapular hairs absent 9
- Mid tibia with two *ad* setae. 3 + 3 *dc* setae (supernumerary fourth *post dc* occasionally present between the normal first and second *post dc* setae). Abdominal T₁ + 2 with excavation clearly not reaching hind margin. Humeral callus with the three main setae standing in a triangle. Infrascapular hairs present **LECANIPA** Rondani
- 9 Three sternopleural setae. Tergites of ♀ abdomen compressed to form a mid ventral abdominal keel bearing stubby spinules. ♀ with ovipositor in form of a strong downcurved hook-like piercer **COMPSILURA** Bouché
- Two sternopleural setae. Tergites of ♀ abdomen normal. ♀ without externally visible piercing ovipositor Undetermined genus [? gen. n.]
- 10 2 + 3 *dc* setae. Two sternopleural setae. Eyes bare. Parafacials fully haired. Intermediate abdominal tergites with discal setae **DELTOMYZA** Malloch
- Dorsocentral setae 3 + 4 or 3 + 3 (rarely 2 + 4). Three sternopleural setae (except sometimes in *Zosteromeigenia*). Eyes bare or haired. Parafacials haired or bare, or partially haired. Intermediate abdominal tergites without discal setae (except in *Paropsivora*) 11
- 11 Three *post dc* setae. Abdomen of ♂ with a fascicle of long dense hair on each side of T₅ (last visible tergite). Parafacials mainly or totally bare, if haired then hairing confined to area immediately below lowest frontal setae 12
- Four *post dc* setae. Abdomen of ♂ without dense hair fascicles on T₅. Parafacials completely haired or at least haired on uppermost quarter or third 13
- 12 Fore tibia with two *pv* setae. Mid tibia with two *ad* setae. Intermediate abdominal tergites with discal setae. Humeral callus with four setae (basal row of three in which median one weakest, and a fourth seta set forwards of the basal row and *stronger* than middle seta of the basal row). Bend of vein *M* strongly abrupt. Eyes haired. Prosternum haired **PAROPSIVORA** Malloch
- Fore tibia with one *pv* seta. Mid tibia with one *ad* seta. Intermediate abdominal tergites without discal setae. Humeral callus with only two strong setae, sometimes a rather weak third seta. Bend of vein *M* not strongly abrupt. Eyes bare [haired in an undescribed New Guinea species]. Prosternum bare [haired in undescribed New Guinea species] **ZOSTEROMEIGENIA** Townsend
- 13 Facial ridges bare (except for the usual few setulae immediately above the vibrissae). Eyes bare or haired. ♀ with the usual well developed outer vertical setae. Vibrissae conspicuously above the level of the epistomal margin (except in *Zenargomyia*) 14
- Facial ridges strongly setulose up most of their height. Eyes densely haired. ♀ without outer vertical setae [character in need of confirmation as very few *Pilimyia* females seen]. Vibrissae inserted only slightly above the level of the epistomal margin **PILIMYIA** Malloch
- 14 Vibrissae inserted only very slightly above the level of the epistomal margin. Eyes bare. Parafacials bare except on the uppermost quarter or third (Text-fig. 49). Ocellar setae very strong. Apical scutellar setae rather strong and crossed **ZENARGOMYIA** Crosskey

- Vibrissae inserted well above the level of the epistomal margin. Eyes bare or haired. Parafacials completely haired or haired at least on the upper halves. Ocellar setae usually absent or weak, sometimes moderately strong in ♀. Apical scutellar setae usually very weak and hair-like, sometimes absent, seldom well developed 15
 - 15 Facial regions of head with yellow or orange ground colour and bright yellow pollinosity. Eyes bare. Basicosta reddish yellow. Legs usually all or mainly reddish yellow, at least tarsi reddish yellow. Haired areas of parafacials not nearly contiguous with haired areas of genal dilations (therefore a conspicuous bare area between haired part of parafacial and the gena). On average larger forms, length 7-12 mm, often with yellow to golden orange hair on sides of thorax and sometimes also the abdomen **FROGGATTIMYIA** Townsend
 - Facial regions of head with rather indeterminate ground colour, not bright yellow and if pale usually rather reddish, pollinosity greyish white to very pale yellowish. Eyes bare or haired, often densely haired. Basicosta nearly always dark brownish or blackish brown. Legs brownish black, sometimes with reddish or reddish yellow tibiae, tarsi dark (except for reddish yellow fore tarsi in male of *A. scutellata*). Haired areas of parafacials nearly contiguous with haired areas of genal dilations (only a very narrow bare gap between parafacial and genal hairing). On average smaller forms, length 5-9 mm, without pale hair on thorax or abdomen **ANAGONIA** Brauer & Bergenstamm
- [Note: no really tangible distinction has been found between *Froggattimyia* and *Anagonia*]

Tribe EXORISTINI

The exoristines are moderately well represented in Australia and Tasmania, seven genera being known from the area. None is endemic, and several of them occur widely in the Oriental Region (*Eozenillia*, *Austrophorocera*) or in most of the zoogeographical regions (*Exorista*, *Stomatomyia*); *Hillomyia* (= *Hillia* Malloch, preocc.) is known from only a few specimens but is perhaps an essentially Papuan genus that has reached the Northern Territory of Australia.

The tribe is reasonably distinctive, possessing the combination of small pre-alar seta plus non-convergent subapical scutellar setae plus abruptly angulate bend to vein *M* (the bend normally accompanied by at least a trace of a fold in the position of *M*₂ continuing towards the wing margin, Text-fig. 87); the genera found in Australia have unusually dependable characters, and most are considerably easier to identify reliably than the genera in most other goniine tribes. Some features common to all the Australian exoristines may be usefully noted as follows: prosternum always haired; male always without proclinate orbital setae; mid tibia with a submedian *v* seta; mid tibia with two or more *ad* setae; hind tibia always without *pd* preapical seta; second costal sector bare ventrally; infrascapular hairs absent; parafacials never completely haired.

KEY TO AUSTRALIAN GENERA OF EXORISTINI

- 1 2 + 3 *dc* setae. Wing with cell *R*₅ closed before the wing margin and with a distinct petiole. Distance on vein *M* from bend to *m-cu* as great as or greater than that from *m-cu* to *r-m*. Scutellum without definite preapical setae. Humeral callus with two setae. Eyes bare 2

- 3 + 3 or 3 + 4 *dc* setae. Wing with cell R_5 not closed before the wing margin, at least narrowly open. Distance on vein M from bend to $m-cu$ much less than that from $m-cu$ to $r-m$ (except in one species of *Stomatomyia*). Scutellum with a pair of preapical setae. Humeral callus with three or four setae. Eyes bare or haired 3
- 2 Abdomen with $T_1 + 2$ excavate to its hind margin. Vein R_1 setulose. Fore tibia with two *pv* setae. Propleuron bare. Scutellum with strong upwardly directed apical setae. Upper occiput without black setulae behind the postocular row. Abdomen with conspicuous white-pollinose bands on T_3 to T_5 . **CHAETORIA** Becker
- Abdomen with excavation of $T_1 + 2$ not reaching the hind margin of the tergite. Vein R_1 bare. Fore tibia with one *pv* seta. Propleuron with a few long white hairs [careful examination needed]. Apical scutellar setae almost absent, represented by a pair of fine hairs. Upper occiput with a few fine black setulae behind the postocular row. Abdomen uniformly black and rather shining
- HILLOMYIA** Crosskey
- 3 3 + 3 *dc* setae. Last section of vein Cu_1 (from $m-cu$ to wing margin) very long, more than half as long as the penultimate section and very much longer than $m-cu$; $m-cu$ joining Cu_1 at an oblique angle. Apical scutellar setae directed very strongly upwards. Costal spine well developed, usually very easily distinguishable from marginal costal setulae and as long as cross-vein $r-m$ or longer 4
- 3 + 4 *dc* setae (except in one unidentified sp. from Northern Territory). Last section of vein Cu_1 normal, shorter than or subequal in length to $m-cu$ and much less than half as long as the penultimate section; $m-cu$ joining Cu_1 approximately at a right-angle. Apical scutellar setae nearly horizontal or directed only slightly upwards (except in some *Exorista*). Costal spine not developed, indistinguishable from marginal costal setulae 5
- 4 Abdomen without discal setae on intermediate tergites (T_3 and T_4). Palpi well developed. ♀ with upper pair of reclinate orbital setae showing at most only a slight outward twist towards the eyes. Apical scutellar setae weak, very much smaller than the lateral scutellar setae. ♂ with or without outer vertical setae, if present then obviously weaker than ocellar setae
- STOMATOMYIA** Brauer & Bergenstamm
- Abdomen with two or more very strong erect discal setae on each intermediate tergite, accompanied by numerous smaller stiff erect setulae. Palpi absent or almost so (at most represented by a minute papilla bearing a long apical hair) (well developed in an undescribed species). ♀ with the upper pair of reclinate orbital setae enormously strong and directed outwards over the eyes (simulating prevertical setae). Apical scutellar setae extremely strong, almost as large as lateral scutellar setae. ♂ with very strong outer vertical setae subequal in size to ocellar setae **SPOGGOSIA** Rondani*
- 5 Facial ridges armed with strong downcurved setae on most of their height. Eyes densely haired. Robust forms with short inconspicuous M_2 fold extending from bend of vein M ; hypopygium of ♂ never with golden hair 6
- Facial ridges mainly bare, only with weak hairs and setulae immediately above the vibrissae which extend at most only for one-third of the height of the facial ridges. Eyes bare or haired. More slender forms with rather narrow tapering abdomen and with a long conspicuous M_2 fold in the wing extending from the bend of M ; ♂ often with dense golden hair on the hypopygium (visible in situ)
- EXORISTA** Meigen
- 6 3 + 4 *dc* setae. Ocellar setae absent or very weak and wiry. Frons and thoracic dorsum not golden 7
- 3 + 3 *dc* setae (? aberrant). Ocellar setae very strong (much larger than upper pair of reclinate orbital setae). Frons and thoracic dorsum conspicuously golden to naked eye Undetermined genus & species

* See Appendix, p. 209.

[Two specimens (♂ and ♀) are in BMNH, London, collection that run out here. They are from Northern Territory. Superficially they much resemble the genus *Phorinia* Robineau-Desvoidy and should perhaps be assigned to it. The presence of only three *post dc* setae may be an aberration, as four would be expected from the total facies.]

- 7 Interfrontal area at mid point subequal in width to parafrontal or at least two-thirds as wide. Second arisal segment not more than twice as long as wide

AUSTROPHOROCERA Townsend

- Interfrontal area at mid point not more than half as wide as parafrontal in most specimens, occasionally up to two-thirds as wide. Second arisal segment about 2.5–4 times as long as wide **EOZENILLIA** Townsend

[This is the least satisfactorily distinguishable genus in the Australian exoristine fauna. The one included species, *E. remota*, is undoubtedly congeneric with *Eozenillia* type-species and is therefore assigned to *Eozenillia*. Distinctions between *Eozenillia* and *Austrophorocera* are very intangible, and probably the former should be synonymised with the latter.]

Tribe ETHILLINI

This small group was originally defined by Mesnil (1944) to include an aggregate of forms possessing a facies much like that of the Winthemiini or Sturmiini but differing from these in having a small pre-alar seta and by having the outer edge of the lower calypter conspicuously bent downwards. These characteristics undoubtedly help to define what appears to be a natural group, although some species of undoubted sturmiines and carceliines have a similar 'downbent' calypter. Conversely some forms such as *Mycteromyiella* in which the lower calypter is not markedly bent down on its outer margin seem to belong in the Ethillini. The undescribed New Guinea fauna contains several interesting forms which to a large extent bridge the gap between *Phorocerosoma* (placed by Mesnil in the ethillines) and *Mycteromyiella* (placed by Mesnil in the sturmiines) and it seems most appropriate – on present knowledge at least – to assign *Mycteromyiella* to the Ethillini.

The known hosts of *Phorocerosoma* are acridid grasshoppers and the known hosts of *Mycteromyiella* are species of Mantodea, but host records have not yet been obtained in Australia itself. The tribal distribution includes Tasmania as well as continental Australia. It is important to note that the characters given in the following key for *Phorocerosoma* apply to the single species known to occur in Australia, but do not necessarily fit extra-limital species of the genus. The generic identities of most of the New Guinea ethillines are too uncertain at present for these forms to be covered in the key.

KEY TO AUSTRALIAN GENERA OF ETHILLINI

- 1 Inner vertical setae converging and crossing before their apices. Abdominal T₁ + 2 and T₃ each with two pairs of very long strong erect median marginal setae. Abdomen without discal setae on intermediate tergites. Humeral callus with the three main setae standing in a triangle. ♀ with a pair of strong prevertical setae that curve outwards over the eyes and *without* outer vertical setae. Pre-alar seta longer than first *post ia* seta . . . **PHOROCEROSOMA** Townsend

- Inner vertical setae subparallel. Abdominal T₁ + 2 and T₃ each with one pair of median marginal setae (those of T₁ + 2 sometimes hair-like or virtually absent). Abdomen usually with one or two distinct discal setae on one or both intermediate tergites. Humeral callus with three main setae standing either in a straight line or in a triangle. ♀ without outwardly directed prevertical setae and with the usual pair of outer vertical setae. Pre-alar seta very small, shorter than first *post ia* seta 2
- 2 Humeral callus with the three main setae standing in a straight line. Lower calypter with the outer edge distinctly bent downwards. Arista with second segment elongate, about 4-5 times as long as broad. Head with two pairs of strong reclinate orbital setae. Mid tibia with one *ad* seta. Vibrissae level with epistomal margin **ETHILLA** Robineau-Desvoidy
- Humeral callus with the three main setae standing in a distinct triangle. Lower calypter not noticeably bent downwards. Arista with second segment not elongate, only about as long as broad. Head without definite reclinate orbital setae (at least in ♂, probably one pair in ♀). Mid tibia with two *ad* setae. Vibrissae inserted well above level of epistomal margin

MYCTEROMYIELLA Mesnil

Tribe WINTHEMIINI

This group is very closely allied to the Carceliini and the Sturmiini and its recognition as a tribe is only doubtfully justified. Townsend (1941) placed *Winthemia* and its allies in the Sturmiini, but recent workers universally treat the winthemiines as a valid tribe and this course is followed for the present work. The arrangement of the humeral setae in *Winthemia* is rather distinctive, there being (in males at least) five setae in which three are strong and are spaced in a subtriangular arrangement; in this respect *Winthemia* differs from the Sturmiini in the strict sense in which the humerals are four arranged as three in a straight line and one set forwards. Mesnil (1944) used the presence of five humeral setae as a key character for recognition of the winthemiines, but in reality the character is poor – often in other winthemiine genera than *Winthemia* itself (e.g. in *Nemorilla*) five setae may not be definitely developed in males and are typically not developed in females (which usually have four humerals).

The winthemiines are best recognized among the Australian Goniinae by the following features in combination (though some Sturmiini and some Carceliini may show some of the features together): eyes densely haired; males without definite reclinate orbital setae; hind tibia (especially in males) with a well developed close-set *ad* fringe; barett completely haired (or nearly so); scutellum with strong crossed horizontal apical setae and with subapical setae inserted widely apart (their bases as distant from each other as base of either from the basal seta of the same side, or even more distantly separated than this) (as in *Carcelia*, Text-fig. 72). A noteworthy feature of several forms is the presence of pale yellow hair on the prosternum instead of the usual black hairs or setulae.

There is close superficial resemblance between Winthemiini and Ethillini, and as the genus *Mycteromyiella* (Ethillini) could easily be confused with the winthemiines it is included in the following key.

Mesnil (1949a : 80) treated *Crypsina* as a subgenus of *Winthemia* but it is here preferred to revert to its original generic status. This course maintains *Winthemia* as a more homogeneous genus, though – certainly – *Crypsina* is very closely allied.

KEY TO AUSTRALIAN GENERA OF WINTHEMIINI

- 1 Parafacials haired on their whole extent 2
- Parafacials bare 3
- 2 Mid tibia with 2 or 3 strong *ad* setae. Vibrissae set high above epistomal margin (distance between level of their insertions and the margin of the epistome at least as great as width of antenna). Vibrissal insertions unusually close to each other, distance between vibrissae less than or not noticeably greater than distance between a vibrissa and the eye. Antennae bright orange
CRYPsINA Brauer & Bergenstamm
- Mid tibia with one submedian *ad* seta. Vibrissae not or only a little above level of epistomal margin. Vibrissal insertions normal, distance between them much greater than distance between vibrissal base and the eye. Antennae largely blackish brown, or if extensively reddish orange then normally suffused with brown at least along forward edges of third segment
WINTHEMIA Robineau-Desvoidy
- 3 Three sternopleural setae (2 + 1). Scutellum without lateral setae. Vibrissae inserted far above epistomal margin (by a distance greater than width of third antennal segment). Pre-alar seta weak, shorter than first *post ia* seta
[**MYCTEROMYIELLA** Mesnil, tribe Ethillini]
- Two sternopleural setae (1 + 1). Scutellum with lateral setae. Vibrissae level with or only slightly above epistomal margin. Pre-alar seta strong, longer than first *post ia* seta **NEMORILLA** Rondani

Tribe CARCELIINI

As it is understood at present this tribe contains those Goniinae that have a large pre-alar seta and the genal region exceedingly narrow (the eyes being relatively so large that they occupy most of the side of the head with consequent reduction of the gena to a narrow strip below the eye that is narrower than the profrons) (Text-fig. 48). The Anacamptomyiini are similar in head facies, but are treated as distinct because of their unusual hosts (see under treatment of Anacamptomyiini below). Some forms closely resemble the Winthemiini because of their densely haired eyes and arrangement of scutellar setae; the genus *Carcelimyia* is especially like the winthemiines because the barettæ is completely haired.

On present evidence the tribe appears to be rather poorly represented in Australia, in contrast to its rich development in the Oriental Region. It is probable, though, that other carceliine genera than those already known will be found eventually in Queensland; this is especially likely because several genera (e.g. *Thecocarcelia*) are known from New Guinea, and there seems to be no reason why they should not occur also in northern Queensland. The distribution includes Tasmania, from which one species is known (*Carcelia tasmanica* Robineau-Desvoidy).

KEY TO AUSTRALIAN GENERA OF CARCELIINI

- 1 Four sternopleural setae. Eyes bare. Antennae exceptionally long, nearly reaching epistome. ♀ with flat shining sclerotized ovipositor (visible externally)
THECOCARCELIA Townsend
- Two sternopleural setae. Eyes bare or haired. Antennae not exceptionally heavy, normally not reaching as far as the epistome. ♀ without such ovipositor 2

- 2 Eyes bare. Apical scutellar setae very small, directed upwards and either not meeting or crossing at tips. Subapical scutellar setae not conspicuously distant from each other, their bases separated by a distance not greater than that between a subapical seta and its corresponding basal seta. Upper occiput with some fine black setulae behind postocular row

ARGYROPHYLAX Brauer & Bergenstamm

- Eyes haired. Apical scutellar setae strong, crossed and horizontal. Subapical scutellar setae very widely separated, distance between bases much greater than that between base of a subapical seta and its corresponding basal seta (Text-fig. 72). Upper occiput without black setulae behind postocular row 3
- 3 Dorsocentral setae 3 + 4. Scutellum with extremely strong apical setae that are at least as strong as, and usually larger than, the lateral setae. Hairing of eyes long and dense, very conspicuous. Barette normally with hairing, at least at anterior end. Wings hyaline. Not conspicuously black forms 4
- Dorsocentral setae 3 + 3 (four *post dc* setae in occasional specimens). Scutellum with apical setae normally shorter and weaker than lateral setae. Hairing of eyes rather short and usually rather sparse, not so immediately conspicuous. Barette totally bare. Wings suffused with brown anterobasally. Conspicuously black forms with shining abdomen which shows bright silver pollinose areas on each side of T₃-T₅ (these especially noticeable on T₄, at least in ♀)

ARGYROTHELAIRA Townsend

- 4 Facial ridges bare. Barette when haired with hairing confined to anterior half (except sometimes in specimens of *Carcelia* s. str.) . **CARCELIA** Robineau-Desvoidy
- Facial ridges closely setulose up most of their height (Text-fig. 48). Barette completely haired **CARCELIMYIA** Mesnil

KEY TO AUSTRALIAN SUBGENERA OF *CARCELIA*

- 1 Mid tibia with a submedian *v* seta. Ocellar setae absent or very small, fine and wiry. ♂ with one pair of reclinate orbital setae, ♀ usually with two pairs (specimens with two such setae on one side and one on the other occur). Hind coxa bare or setulose posterodorsally subgenus **CARCELIA** Robineau-Desvoidy
- Mid tibia without a *v* seta. Ocellar setae very strong (except in *murina* where absent or hair-like). Both sexes with two pairs of reclinate orbital setae. Hind coxa entirely bare posterodorsally. subgenus **SENOTETOPIA** Macquart

Tribe **ANACAMPTOMYIINI**

Townsend (1940) recognized a tribe for *Anacamptomyia* and its allies and placed it near *Compsilurini* (i.e. *Blondeliini*), but Mesnil (1944) included the anacamptomyiines among the carceliines. On adult morphology Mesnil's placement seems to be more appropriate than Townsend's, and in fact it is difficult to find characters that satisfactorily differentiate the *Anacamptomyiini* from the *Carceliini*. Nevertheless the *Anacamptomyiini* is here treated as a valid tribe because of its biology: the members of the tribe are unique amongst the *Goniinae* in being parasites of paper-making wasps (such as *Belonogaster* and *Polistes*), and this host-relationship is so exceptional that it appears justified to give it considerable weight in assessing whether or not to treat the flies involved as carceliines or not. It appears possible that the resemblances between *Carceliini* and *Anacamptomyiini* are mainly convergent.

Mesnil (1944 : 27) synonymized Malloch's Australian genus *Vespihora* with the African genus *Anacamptomyia* Bischof. This synonymy is accepted here, but it is pointed out that the only Australian species, viz. *nigriventris* (the type-species of *Vespihora*) differs in several respects from typical *Anacamptomyia*; for example the eyes are bare, there are no discal setae on the intermediate abdominal segments, the median marginal setae of T_{1+2} are weak or absent and there are only two p setae on the mid tibia. On the other hand, the general facies of *Vespihora*, the setulose facial ridges and the upwardly directed and crossed apical scutellar setae, and the tendency towards reclinate uppermost frontal setae, conform with *Anacamptomyia* (though the apical scutellars are much weaker than the enormous apicals in the African *Anacamptomyia* species).

The genus *Koralliomysia* is tentatively placed in this tribe because of the Hymenopterous hosts and the anacamptomyiine-facies (head profile as Text-fig. 52).

The species in this tribe are rather unusual amongst goniines for the pallid reddish or reddish yellow colouring of most specimens. In all the Australian species the basicosta is clear pale yellow-orange and the legs (including the tarsi) are usually all reddish yellow (sometimes the femora partially dark brown in *nigriventris*). So far the Australian distribution is only known to include Queensland and New South Wales. One genus, *Euvespihora* Baranov, has very recently been discovered in Hawaii (Oahu).

Biologically the Anacamptomyiini are an Old World counterpart to the small tribe Ophirionini of the Neotropical region, members of which also parasitize social Vespidae (especially the genus *Polybia* Lepeletier).

KEY TO AUSTRALIAN GENERA OF ANACAMPTOMYIINI

- 1 Propleural seta present. Parafrontals meeting in mid-line of frons, interfrontal area therefore obliterated or almost so. Antennae very small, antennal axis below mid-eye level. Mid tibia with at least two strong *ad* setae. [Parasite of *Ropalidia* and *Polistes*] **KORALLIOMYSIA** Mesnil
- Propleural seta absent. Parafrontals not meeting, interfrontal area well developed. Antennae not unusually small, antennal axis distinctly above mid-eye level. Mid tibia with only one strong *ad* seta. [Parasites of *Polistes*] 2
- 2 Facial ridges strongly setulose for most of their height . . . **ANACAMPTOMYIA** Bischof
- Facial ridges bare (except for usual small setulae immediately above vibrissae) . . . **EUVESPIHORA** Baranov

Tribe STURMIINI

The Sturmiini are very well represented in Australia and Tasmania, the fauna including many genera that are widely distributed elsewhere in the Old World as well as several distinctive endemic genera. Several undescribed species are known, and some of these may require additional new genera for their satisfactory placement.

The group is moderately distinctive among the goniines with large pre-alar seta, and most forms possess the following features in combination. Vibrissae inserted at least slightly above (usually well above) the epistomal margin; gena wider than the profrons; $3 + 4 \text{ } \bar{dc}$

setae; humeral setae arranged as three in a straight line with one in addition set forwards of the main line (this fourth seta occasionally missing); lower calypter with well defined inner posterior angle and inner margin closely following edge of the scutellum. Other tribes possess some of these characteristics, or some members of them do, but usually not all simultaneously (for example, *Winthemia* and *Carcelia* have a sturmiine type of lower calypter in which the inner edge abuts closely to the scutellum). All Australian Sturmiini, in addition to the characters mentioned, have a strong submedian *v* seta on the mid tibia and have the ventral surface of the second costal sector bare.

The endemic forms include a well-developed group in which the parafacials are strongly haired, the eyes densely haired, the ocellar setae absent, the lateral scutellar setae absent (exceptions in *Polychaeta*), and in which there is only one definite pair of reclinate orbital setae. In some of these forms the antennae are exceptionally long and the second arisal segment elongate, but such forms are interconnected by intermediates with other forms in which the antennae are not specially elongate and both basal arisal segments short. At present several genera (e.g. *Tritaxys*, *Eurygastropsis*, *Polychaeta*) are recognized in this complex, but future study may well suggest that some of these genera ought to be amalgamated. *Eurygastropsis*, for instance, is hardly distinguishable from *Tritaxys* (syn. *Goniophana*) by more than the abdominal pollinosity and colour. The genus *Polychaeta* exhibits some baffling variability in the scutellar setae; normally in sturmiines these are extremely stable in strength and complement, but in *Polychaeta* what appears to be the same species may have no lateral scutellar setae at all, or may have one or two pairs extremely strongly developed (or even be bilaterally asymmetrical in bristle complement in the same specimen).

The non-endemic forms found in Australia include well known genera of the palaetropics such as *Palexorista*, *Sisyropa*, *Sturmia* and *Zygobothria*. Genera such as these occur (as would be expected) mainly in Queensland, though some are represented widely throughout Australia; as a rule the non-endemic sturmiine genera are unrepresented in Tasmania, though *Blepharipa* at least occurs there. The widespread genera *Drino* and *Pales* are found in New Guinea, and their eventual discovery in Queensland seems a possibility; they have accordingly been entered in the key that follows.

The genus *Winthellia* (described by Mesnil under the preoccupied name *Thyellina*) is here placed in the Sturmiini, although described as a winthemiine. Its characters appear to ally it closely with *Tasmaniomyia*, which has all the main diagnostic features of Sturmiini.

KEY TO AUSTRALIAN GENERA OF STURMIINI

- | | | |
|---|--|----|
| 1 | Wing cell R_5 normal, distinctly open at the wing margin | 2 |
| — | Wing cell R_5 closed just at or before the wing margin | 24 |
| 2 | Wings distinctly bicolorous, creamy yellowish near base and suffused with brown anteromedially. Interfrontal area very reduced, under half as wide at mid point as parafrontal. Apical scutellar setae exceptionally strong and horizontal, as large as or larger than the subapical scutellar setae PALIANA Curran | |
| — | Wing not so, hyaline or at most only faintly yellowish or brownish anterobasally. Interfrontal area not exceptionally narrow, subequal in width to parafrontal or at least half as wide. Apical scutellar setae usually weak or very weak (some- | |

- times absent) and directed at least slightly upwards, if strong and horizontal then weaker than subapical scutellar setae 3
- 3 Eyes haired (hairing long, dense and very conspicuous) 4
- Eyes bare (a few very minute hairs sometimes visible under high magnification) 13
- 4 Head without definite reclinate orbital setae. Frontal region bulbously convex and with very reduced frontal setae (fig. 21 in Malloch, 1929b). Head ground colour bright orange-yellow with blackish ocellar triangle. Legs unicolorous orange-yellow. Abdomen thickly greyish white pollinose with a pattern of black spots. Each side of venter of abdominal tergites 3 and 4 in ♂ with a dense hair fascicle **ARRHENOMYZA** Malloch
- Head with one or more pairs of strong reclinate orbital setae. Frontal region not bulbously convex (distinctly flattened when seen in profile) and with well developed frontal setae. Head ground colour not so. Legs black or brownish black (except in *Zebromyia*). Abdomen without such pattern. ♂ without dense hair fascicles on abdominal venter 5
- 5 Facial ridges very wide and covered with several irregular rows of small strong setulae (setulae only slightly increasing in size towards front edge of ridge). Parafacials haired at upper ends immediately below lowest frontal setae. Prescutum and scutum each with a transverse row of four small black spots anteriorly (distinct against the yellowish grey pollinose background). Abdomen conspicuously patterned, T₃–T₅ greyish yellow pollinose with dark marks in form of a pair of wide blackish or dark reddish brown triangles on T₃ and T₄ and a pair of small round black spots at tip of T₅. Head with reddish ground colour and chequered silvery white pollinosity that appears to shift with direction of light. Legs reddish yellow **ZEBROMYIA** Malloch
- Facial ridges bare or setose; if setose then with a row of strong setae on front edge and only one or two inconspicuous setulae outside of the main row. Parafacials either completely haired or completely bare. Prescutum and scutum without such pattern. Abdomen without such pattern. Head not so. Legs black or brownish black 6
- 6 Parafacials completely haired. Ocellar setae absent. Always fewer than four sternopleural setae. Lateral scutellar setae absent (except in occasional specimens of *Polychaeta*) 7
- Parafacials bare. Ocellar setae present or absent. Sometimes four *stpl* setae. Lateral scutellar setae present 9
- 7 Dorsum of abdomen shining black or very dark red-brown except for last visible tergite (T₅) which is thickly coated with uniform whitish pollinosity (pale last abdominal segment therefore strikingly contrasting with the rest of the abdomen) **EURYGASTROPSIS** Townsend
- Abdomen not so, ground colour reddish to blackish with thin whitish pollinosity (sometimes appearing patchily distributed) on all tergites, no segments shining and last segment not contrasted in colour with remainder of abdomen. 8
- 8 Arista thickened on more than its basal half, sometimes on most of its length; second aristal segment normally at least 2.5 times as long as broad. Pollinosity of abdomen tending, to naked eye, to appear more conspicuous anteriorly on segments than elsewhere or to appear rather chequered. Smaller forms, length 8–11 mm **TRITAXYS** Macquart
- Arista only thickened on its basal half or less; second aristal segment not more than twice as long as broad. Pollinosity of abdomen tending, to naked eye, to appear as a very thin but evenly distributed bloom. Larger forms, length 12–16 mm **POLYCHAETA** Macquart
- [This genus is only very doubtfully distinct from *Tritaxys*]
- 9 Four sternopleural setae (2 + 2). Second aristal segment distinctly elongate (about three times as long as broad or more) 10

- Two or three sternopleural setae (1 + 1 or 2 + 1). Second arisal segment not at all elongate 11
- 10 One pair of reclinate orbital setae. Ocellar setae absent. Mid tibia with at least two *ad* setae **SISYROPA** Brauer & Bergenstamm [part: *S. taylori* Curran]
- Two or three pairs of reclinate orbital setae. Ocellar setae present, strong. Mid tibia with one *ad* seta **PARADRINO** Mesnil
- 11 Facial ridges strongly setose up most of their height. One pair of reclinate orbital setae. Dorsum of thorax shining bluish black, without pattern 12
- Facial ridges bare. Two pairs of reclinate orbital setae. Dorsum of thorax yellowish grey to golden pollinose with a bold pattern of four black vittae on prescutum, and a large black anteromedian area and pair of black sublateral vittae on the scutum **CALOZENILLIA** Townsend
- 12 Ocellar setae absent. One strong isolated *ad* seta on mid tibia **PALIA** Curran
- Ocellar setae present. Two or more strong *ad* setae on mid tibia **PALES** Robineau-Desvoidy
- 13 Parafacials completely covered with long strong hair (hairing *very* conspicuous). Ocellar setae directed outwards and not at all forwards. Lateral scutellar setae absent. Parafrontals covered with long strong inclinate setulae that are nearly as strong as the frontal setae. ♂ with very strong external vertical setae **PARAGONIA** Mesnil
- Parafacials bare or with rather weak inconspicuous hairing confined to upper halves. Ocellar setae proclinate or absent (slightly divaricate in *Winthellia*). Lateral scutellar setae present or absent. Parafrontals usually without such strong setae outside the frontal setae. ♂ usually without definite external vertical setae 14
- 14 Lateral scutellar setae absent (scutellum therefore with only three pairs of marginal setae, the basals, subapicals and apicals). Upper halves of parafacials at least partially haired. Three sternopleural setae. ♂ abdomen without secondary sexual modified hair 15
- Lateral scutellar setae present (scutellum with a total of four or five pairs of marginal setae). Upper halves of parafacials with or without hairing. Three or four sternopleural setae. ♂ abdomen usually with some or most of the hair of the venter of T₄ (sometimes also T₃) modified 17
- 15 Ocellar setae present. Facial ridges bare (except for the usual few setulae on lowermost quarter immediately above vibrissae). Abdominal tergites 1 + 2 and 3 each with a pair of strong median marginal setae. One or both of intermediate abdominal tergites with discal setae. Upper occiput with irregular black setulae behind the postocular row 16
- Ocellar setae absent. Facial ridges strongly setulose for more than half their height. Abdominal tergites 1 + 2 and 3 without median marginal setae. Intermediate abdominal tergites without discal setae. Upper occiput without black setulae behind the postocular row **ANAMASTAX** Brauer & Bergenstamm
- 16 Mesonotum shining bluish black. Abdomen shining blackish green with traces of reddish ground colour (not noticeably pollinose) **TASMANIOMYIA** Townsend
- Mesonotum greyish white pollinose with four narrow blackish vittae. Abdomen blackish with chequered whitish pollinosity conspicuous on intermediate tergites **WINTHELLIA** Crosskey
- [This genus and *Tasmaniomymia* are not separable on any convincing characters and may need to be synonymized when better known]
- 17 Prosternum bare. Facial ridges with strong downcurved setae on more than half their height **BLEPHARELLA** Macquart
- Prosternum haired or setulose. Facial ridges bare (except for usual very small setulae immediately above vibrissae) 18
- 18 Head with two pairs of reclinate orbital setae (upper one sometimes weak) 19

- Head with one pair of reclinate orbital setae (strong and isolated, but ♀ sometimes with a smaller erect seta ventrad and mesad of the true reclinate orbital) 22
- 19 Gena conspicuously broad, two-fifths or more of eye height. Facial ridges prominent at least lower half well visible in profile. Parafacials about three times as wide as third antennal segment. Three sternopleural setae (exceptionally four but if so not arranged $2 + 2$). Basal node of vein R_{4+5} with four or more small setulae. Mid tibia with at least two strong *ad* setae. Head thickly golden pollinose. Dorsum of thorax bright yellow or golden pollinose with four bold black vittae (inner pair shorter than outer pair) **UGIMEIGENIA** Townsend
- Gena narrow, not exceeding one-sixth of eye height. Facial ridges not visible in profile or only just visible immediately above vibrissae. Parafacials less than twice as wide as third antennal segment. Four sternopleural setae ($2 + 2$). Basal node of vein R_{4+5} with one setula (rarely also with one minute supernumerary hair). Mid tibia with one *ad* seta (except in *Zygobothria atropivora*). Head not thickly golden pollinose, at most only partially pale yellow. Dorsum of thorax not so 20
- 20 Ocellar setae very strong, subequal in size to reclinate orbital setae, inserted slightly in front of anterior ocellus. Parafacials totally bare. Mid tibia with one or two *ad* setae **ZYGOBOTHRIA** Mik
- Ocellar setae absent or very weak and much smaller than reclinate orbital setae, when present not inserted at all forwards of the anterior ocellus. Parafacials finely haired on upper parts (bare in *Drino* which is not yet positively known from Australia). Mid tibia with one *ad* seta 21
- 21 Parafacials finely haired on upper parts (Text-fig. 51), hair sometimes extending slightly on to lower halves, occasionally only a few hairs immediately below lowest frontal setae but parafacials never entirely bare. Ocellar setae present, weak and wiry. Each side of venter of fourth abdominal tergite of ♂ with well defined hair-patch, usually large and dense with hair very long and converging into a distinct fascicle **PALEXORISTA** Townsend
- Parafacials completely bare. Ocellar setae absent. Each side of venter of fourth abdominal tergite of ♂ with unmodified hair or with a large area of short fine close-set hair not formed into a definite fascicle **DRINO** Robineau-Desvoidy
- 22 Scutellum with subapical setae inserted very far apart, distance between their bases conspicuously greater than that between a subapical seta and its corresponding basal seta. Apical scutellar setae very strong, horizontal or almost so, nearly as strong as lateral setae. Four sternopleural setae ($2 + 2$). Abdomen of ♂ with a large area of very long dense hair around the sides of T_4 **STURMIA** Robineau-Desvoidy
- Scutellum with subapical setae not very widely separated, distance between their bases less than or at most subequal to that between a subapical seta and its corresponding basal seta. Apical scutellar setae very weak and directed at least slightly upwards, very much weaker than lateral setae. Three or four sternopleural setae. Abdomen of ♂ with or without such hair 23
- 23 Abdomen with last tergite conspicuously small in relation to preceding tergite (T_5 usually not more than about half as long as T_4). Three or four sternopleural setae (normally three in ♂ and four in ♀, but males with four and females with three occur). Lateral scutellar setae very strong, subequal in size to basals and subapicals (often a second pair of laterals developed in addition to main pair). Abdomen of ♂ with large area of very dense long hair around sides of T_4 . $T_1 + 2$ and T_3 always without median marginal setae. Larger forms (length 9-15 mm) **BLEPHARIPA** Rondani
- Abdomen with last tergite not unusually small in relation to preceding tergite (T_5 subequal in length to T_4 in ♂, about two-thirds as long in ♀). Four sternopleural setae in both sexes. Lateral scutellar setae well developed but distinctly

weaker than basals or subapicals (never a second pair of laterals). Abdomen of ♂ with hair on T₄ unmodified. T₁ + 2 and T₃ with or without median marginal setae. Smaller forms (length 6–8 mm)

SISYROPA Brauer & Bergenstamm [part: undetermined spp.]

- 24 Eyes bare. Abdomen patterned, T₃–T₅ thickly coated with whitish pollinosity except for a shining black transverse fascia on each intermediate tergite which is narrowly broken in the mid line but on each side extends round on to the ventral surface of the tergite. Legs orange-yellow with blackish brown tarsi

QUADRA Malloch

- Eyes haired. Abdomen without such pattern, appearing generally blackish or reddish black with an inconspicuous coating of yellowish grey pollinosity. Legs mainly black or brownish black, only tibiae reddish yellow

'Quadra' dissimilis Malloch (? gen. n.)

Tribe GONIINI

This small tribe is easily distinguishable from all other members of the subfamily Goniinae occurring in Australia by the strong reclinate ocellar setae (in other goniine tribes the ocellars are either proclinate or absent). It is represented in eastern and western Australia but appears to be absent from Tasmania. Two genera are known from Australia, both of which have an extensive distribution in Africa and the Oriental Region; one of them (*Pseudogonia*) occurs also in the southern Palaearctic and eastwards as far as New Guinea and the Solomons.

KEY TO AUSTRALIAN GENERA OF GONIINI

- 1 Three sternopleural setae (2 + 1, one of anterior pair sometimes almost hair-like). Scutellum without lateral setae (therefore with only two pairs of strong horizontal marginal setae). Parafacials bare. Facial ridges setulose on most of their height
GONIOPHTHALMUS Villeneuve
- Four sternopleural setae. Scutellum with a pair of extremely strong lateral setae (therefore with three pairs of horizontal marginals). Parafacials strongly but sparsely haired (hairing nearest facial ridges setiform). Facial ridges bare
PSEUDOGONIA Brauer & Bergenstamm

Tribe ERYCIINI

This tribe is little more than a useful aggregate of genera to recognize temporarily, until more is known of the biology of the included forms (especially their reproductive habit). Almost certainly the tribe is polyphyletic and will later need to be dismembered and its constituent genera reassigned to freshly defined tribes. At the moment the tribe contains those genera of Goniinae with large pre-alar seta that will not satisfactorily fit into other tribes (at least, not without widening the definitions of these and destroying the homogeneity they have at present). In practice if a goniine with large pre-alar setae does not show the recognizable facies of a winthemiine, carceliine or sturmiine then it almost certainly belongs in this tribe and its genus is most likely to be recognizable from the eryciine generic key.

The key to Australian genera here given is, however, only a preliminary one. The Australian fauna contains many undescribed forms that will have to be fitted into the Eryciini when they are named. Eryciine forms are rather well developed in Australia, and most of the genera are endemic; some essentially extra-limital genera (such as *Aplomya* and *Erythrocerca*) occur, and it is likely that other Oriento-Papuan genera (such as *Aneogmena*) will eventually be found in Queensland. Some of the Australian eryciines, like *Austronilea*, are extraordinarily similar to Palaearctic counterparts, and the Tasmanian fauna includes several undescribed forms that belong in the subgroup Baumhaueriina (a segregate occurring elsewhere in the Palaearctic Region and southern Africa); the Tasmanian forms referred to are recognized by the possession in the females of a pair of outwardly-directed prevertical setae, and are the only Australian Goniinae known that possess prevertical setae (except for the species of *Spoggosia*).

It may be useful to note that all the Australian eryciines so far known have the lower surface of the second costal sector bare, and all have at least three setae on the humeral callus, these standing more or less in a straight line (there are no Australian eryciines, so far known at least, that have three humeral setae set in a well defined triangle: three humerals in a triangle occur in Walker's type of *Tachina calliphon*, which is an eryciine, but there is uncertainty as to whether this specimen is genuinely Australian).

The genus *Bactromyiella* is very difficult to place satisfactorily but is here retained in the Eryciini; the small *pra* seta suggests that it ought possibly to be placed in the Blondeliini, and the general facies and haired barette suggest that it would not be inappropriate to treat it as a winthemiine.

The eryciine genera *Aneogmena* and *Dolichocolon* are included in the following key as they occur in New Guinea, and may possibly occur in Australia.

KEY TO AUSTRALIAN GENERA OF ERYCIINI

- 1 Wing with cell R_5 closed well before the wing margin and long-petiolate. Last section of vein Cu_1 conspicuously longer than cross-vein $m-cu$. Two presutural dorsocentral (*prst dc*) setae (very weak third setula sometimes developed between two main setae). Apical scutellar setae directed almost straight upwards **PHOROCEROSTOMA** Malloch
- Wing with cell R_5 open at wing margin or just closed at the margin (not at all petiolate). Last section of vein Cu_1 shorter than, or subequal in length to, $m-cu$. Three presutural dorsocentral setae (except in *Aneogmena* and *Erythrocerca* in which normally two). Apical setae of scutellum horizontal or directed obliquely upwards, sometimes absent 2
- 2 Mid tibia without a submedian *v* seta. Barette haired along its length (sparsely in ♀). Sexes strongly dimorphic in colour and pattern: ♂ with thorax and first abdominal segment black and remainder of abdomen bright golden orange or orange-red; ♀ black with pleural regions, two fasciae on mesonotum, apex of scutellum, and transverse band on each abdominal tergite 3-5, greyish yellow to bright golden **BACTROMYIELLA** Mesnil
- Mid tibia with a submedian *v* seta. Barette bare or with only one or very few hairs anteriorly (more extensively haired in *Teretrophora*). Sexes not strongly dimorphic in colour or pattern, never as described above 3

- 3 Mesonotum and abdomen with a bold pattern of small black spots against a very pale greyish yellow pollinose background, pattern comprised as follows: prescutum with pair of rounded sublateral spots and anteromedian black mark, scutum with prescutellar black spot; abdomen with $Tr + 2$ black and a median and a pair of sublateral black spots on T_3 and T_4 . Legs uniformly reddish yellow. Presutural intra-alar seta absent, two or three postsutural intra-alar setae, *ia* setae therefore $0 + 2-3$. Head profile as Text-fig. 50. **METAPHRYNO** Crosskey
- Nondescript forms without such pattern. Legs black or partly so, if mainly reddish yellow then at least the tarsi black-brown. Intra-alar setae always $1 + 3$. Head profile different. 4
- 4 Wings distinctly bicolorous, creamy yellowish near base and suffused with brown anteromedially. Interfrontal area very reduced, not more than half as wide as a parafrontal. Apical scutellar setae exceptionally strong, as large as or larger than the subapicals; subapical scutellar setae widely separated, bases much wider apart than distance from insertion of a subapical seta to its corresponding basal seta. [PALIANA Curran, tribe Sturmiini]
- Wings more or less completely hyaline, at most slightly brownish anterobasally. Interfrontal area not conspicuously narrow, as wide as or only slightly narrower than a parafrontal. Apical scutellar setae (when present) much weaker than subapicals; subapical scutellar setae not unusually widely separated, distance between bases at most only a little greater than distance from base of one subapical to its corresponding basal seta. 5
- 5 Three *post dc* setae. Basal node of R_{4+5} with a row of 5-7 setulae that extends nearly half way to cross-vein *r-m*. All frontal setae of ♂ very strongly reclinate. Rather elongate black and silvery forms (with characteristic appearance of scutellum which is sharply divided into silver-and-black halves which reverse in appearance with direction of light). ANEOGMENA Brauer & Bergenstamm
- Four *post dc* setae. Basal node of R_{4+5} with only 1-3 setulae. Frontal setae all or mainly inclinate. Not such forms. 6
- 6 Four sternopleural setae. 7
- Two or three sternopleural setae. 8
- 7 Mid tibia with one strong isolated *ad* seta. Eyes densely haired. Abdominal T_5 unusually small, less than half as long as T_4 . Scutellum with apical setae stronger than laterals, crossed and horizontal. APLOMYA Robineau-Desvoidy
- Mid tibia with two strong *ad* setae. Eyes virtually bare. Abdominal T_5 normal, nearly as long as T_4 . Scutellum with apical setae weaker than laterals and directed obliquely upwards. 'Bactromyia' crassiseta Baranov (? genus)
- 8 Parafacials covered with very long conspicuous hair: haired area extending to ventral ends of parafacials and more or less continuous with hairing of the genae. Two sternopleural setae. ♀ with only one pair of proclinate orbital setae
- PSEUDALSOMYIA** Mesnil
- Parafacials usually bare, if some hairing present then either confined to upper halves of parafacials or very short and inconspicuous. Three sternopleural setae (except in *Palia* and some specimens of *Teretrophora*). ♀ with two pairs of proclinate orbital setae. 9
- 9 Mid tibia with one *ad* seta (very strong and in submedian position). 10
- Mid tibia with two or more *ad* setae (setae additional to main one sometimes very small in ♂ of *Teretrophora*). 11
- 10 Intermediate abdominal tergites with discal setae. Ocellar setae present. Upper occiput with black setulae behind the postocular row. Hind tibia with a *pd* preapical seta in addition to the normal *d* and *ad* preapicals. Eyes sparsely short-haired. Femora reddish yellow (at most only slightly blackish near the apices). ERYTHROCERA Robineau-Desvoidy
- Intermediate abdominal tergites without discal setae. Ocellar setae absent.

Upper occiput without black setulae behind the postocular row. Hind tibia without a *pd* preapical seta. Eyes densely long-haired. Femora black-brown
[*PALIA* Curran, tribe Sturmiini]

- 11 Parafacials finely and inconspicuously haired (especially on middle part of their height). Hind tibia with a *pd* preapical seta in addition to the normal *d* and *ad* preapicals. Antennae unicolorous bright orange. Legs reddish yellow (except for the tarsi). Abdomen rather uniformly covered with golden pollinosity in ♂ and ashy grey pollinosity in ♀. Lateral scutellar setae absent

CHLOROGASTROPSIS Townsend

- Parafacials bare or with sparse stiff hairs on upper parts. Hind tibia without *pd* preapical seta in addition to the *d* and *ad* preapicals. Lateral scutellar setae present or absent. Antennae not unicolorous orange, at least the third segment extensively brown. Legs largely blackish brown, the femora as well as the tarsi at least partly dark (except in *Aprotheca*). Abdomen not so (but extensively yellowish pollinose in *Aprotheca* ♂) 12
- 12 Scutellum without lateral setae. Apical scutellar setae well developed and crossed (one of the pair absent in occasional specimen). Intermediate abdominal tergites without discal setae 13
- Scutellum with a pair of long lateral setae. Apical scutellar setae absent or minute, fine and divergent (? *Aprotheca*). Intermediate abdominal tergites with or without discal setae 14
- 13 Upper half of parafacials with stiff setulose hairs. Facial ridges bare and widely visible in profile. Eyes densely haired. Vibrissae well above level of epistomal margin. Upper occiput with an irregular row of black setulae behind the postocular row **AUSTROPHRYNO** Townsend

- Parafacials completely bare. Facial ridges with very strong downcurved setae on nearly their entire height. Eyes almost bare (some very short sparse hairs visible under high power magnification). Vibrissae level with epistomal margin. Upper occiput without black setulae behind postocular row

DOLICHOCOLON Brauer & Bergenstamm

- 14 Legs black or brownish black. Facial region not noticeably warped forwards at the epistome. Facial ridges with strong downcurved setae up most of their height 15
- Legs reddish yellow (except for dark tarsi). Facial region strongly warped forwards at the epistome. Facial ridges bare (except for the usual few setulae immediately above vibrissae) **APROTHECA** Macquart*

- 15 Head in profile very strongly subtriangular (Text-fig. 47). Intermediate abdominal tergites each with a pair of strong erect discal setae. Upper occiput with black setulae behind the postocular row. Abdominal T₅ of ♀ normal. Barettae bare

AUSTRONILEA Crosskey

- Head in profile not strikingly triangular, only a little shorter at the vibrissal axis than at the antennal axis. Intermediate abdominal tergites without discal setae, or one very feeble pair of discals haphazardly developed on T₄. Upper occiput without black setulae behind the postocular row. Abdominal T₅ of ♀ of extraordinary elongate conical shape (Text-fig. 95), preceding two tergites correspondingly very short and relatively wide. Barettae haired

TERETROPHORA Macquart

* The genus *Aprotheca* is known only from Macquart's types that are in very bad condition. They appear to have only three postsutural dorsocentral pores and the *dc* complement in *Aprotheca* may be 3 + 3.

PART II—A TAXONOMIC CATALOGUE OF THE AUSTRALIAN TACHINIDAE

INTRODUCTION

The only pre-existing published catalogue of the Australian Tachinidae is that of Malloch (1928*b*), in which he listed eighty-eight genera and two hundred and twenty-eight species. Malloch's list was essentially only a very preliminary one derived solely from the literature, and Malloch was well aware of its limitations, as is evident from the following paragraph in the preamble to his catalogue which deserves quotation: 'It will be seen that there is quite an array of species included, but it is not to be assumed that all names standing in the list as apparently valid species are in that category. I have not attempted to synonymize species, except where previous workers have already done so, but I know many of the included names will have to be sunk as synonyms of previously described forms appearing in the catalogue. The work of weeding out such synonyms can only be done by someone who will undertake a comprehensive study of the family, and definite identifications will usually depend upon an examination of the type specimens of the species'.

In the forty-four years that have elapsed since Malloch's catalogue there has been considerable, though spasmodic, interest in the taxonomy of Australian Tachinids, and many Australian genera and species have been described since that time (many of them by Malloch himself in his post-1928 papers); in addition, many non-endemic genera have been recognized in the Australian fauna. In the new catalogue that follows a total of 136 genera are treated as valid, and 421 species are listed as valid on the evidence available at the moment (there are, of course, many undescribed genera and species known in museum collections and the figures given are for named taxa only). A large number of names, both generic and specific, are treated as synonyms.

The catalogue is based on a study of very nearly all of the types of Australian Tachinidae that are still in existence (the types are lost or missing in the cases of only 29 out of a total of 487 nominal species-group taxa with an Australian provenance). These studies of the types (including those of the type-species of genera) have made it possible to weed out many of the obvious synonyms, particularly among generic names but very often in the case of specific names also. They have also made it possible to make reliable assignments of described species to currently recognized genera, many of the placements so made involving new combinations (as listed on p. 158). It cannot be claimed that all cases of synonymy between specific names have been unmasked, and it is likely that future critical generic revisionary work will reveal some additional specific synonyms. (In difficult genera where specific criteria are uncertain at present it has been considered best to maintain some or all of the specific names as valid until their true status can be elucidated: cases of suspected synonymy have, however, been indicated.)

EXPLANATORY INFORMATION ON THE CATALOGUE FORMAT

ARRANGEMENT OF TAXA AND NAMES. Subfamilies are placed in the conventional order beginning with Phasiinae and ending with Goniinae. Tribes are in

systematic order within subfamilies (rather arbitrary positional placements being made for the more aberrant tribes). Genera, subgenera and species treated as valid are listed *alphabetically* within their higher category, as there is no accepted systematic order for their placement. Nomenclatorial synonyms are listed *chronologically* under their respective valid names. Incorrect subsequent spellings and misidentifications are listed after the nomenclatorial synonyms (if any), and each entry of a misidentification is placed in square brackets.

CITATION OF NAMES AND REFERENCES. In each entry the name (generic, subgeneric or specific) is cited first, followed by its author and date of publication and the page reference to the work in which the name appeared; the author, year date (letter-suffixed if more than one work by the same author in any year), and page are always sufficient for obtaining the complete reference to the work containing the name from the bibliography. Where a work is best known from a separately paginated reprint version the reprint page reference is given in parentheses immediately after the journal page reference.

The name of the original genus to which any species-group name was assigned when first published is shown in parentheses immediately after the page reference, *but only when different from the present generic assignment* (if no generic name follows the page reference it is *always* to be inferred that the species-group taxon in question was originally placed in the same genus as that in which it is here listed). It is always clear from this convention whether or not any species remains in its original genus, and parentheses have intentionally not been placed around the authors' names for those species that are no longer in their original genera (mainly because the custom of bracketing around the names of authors of transferred species does not lend itself to this type of catalogue in which both year date and page reference are given).

Spellings of names accord with the rigid requirements of the *International Code of Zoological Nomenclature*. Ordinarily the original spelling is the correct one for each name, but as a few of the Australian tachinid genera have a neuter gender (e.g. the names ending in *-stoma* and *-soma*) it has sometimes been necessary to change the endings of adjectival specific names associated with such generic names (to accord with Article 30 of the *Code*). For example, most species here placed in *Senostoma* were originally described in genera with feminine gender and the names originally had feminine endings; on being brought into combination with *Senostoma* (neuter) the endings have had to be changed appropriately. (Here it may be noted that I have no personal sympathy with Article 30, which imposes an unnecessary burden on zoological nomenclature.) In some instances a specific name when first published was associated with an incorrect subsequent spelling of a generic name: when it appears helpful to do so, the incorrect spelling is cited in parentheses after the page reference even though the species in question remains in the same genus.

Citations of the mode of fixation of type-species accord with the *Code*, and are 'original designation', 'monotypy', and 'subsequent designation' (with a reference to the designator given). Many monotypic genera when originally erected had

the type-species originally designated, in which case the mode of fixation is cited solely as 'original designation', but the words 'and monotypy' are added in the few special 'gen. n., sp. n.' situations of the kind covered by Article 68 (a) (i) of the *Code*.

Specific synonyms are indented but their citations and references are dealt with in the same manner as the valid names. All valid names are printed in bold-face italic type and junior synonyms in non-bold italics; other invalid names (incorrect subsequent spellings, nomina nuda, misidentifications, infrasubspecific names, junior primary homonyms in specific names, and junior homonyms in generic names) are also printed in non-bold italics.

When a name was originally proposed for a genus but is now employed in the catalogue as the valid name for a subgenus the words 'as genus' are appended in parentheses after the page reference. Similarly, if a species-group name is now employed in a different status from the original then the original status is indicated in parentheses after the page reference, e.g. 'as var. of *ruficornis*'.

TYPE-INFORMATION. The following information is given for the primary type (holotype, lectotype or neotype) of each available species-group name listed in the catalogue: type-status; sex of type; type-locality; type-depository and location; a statement in the form '[examined]' to show when the primary type has been seen personally.

The following points should be noted about the data on primary types.

(1) *Type-status.* The primary type is cited as holotype if it is clear from the original publication that only one specimen was available at the time of description (whether designated in some way as 'type' or not), or if only one specimen is known to exist and there is no published evidence as to how many specimens were present in the type-series; and, of course, whenever a single specimen was designated as type by the original author from a series of specimens. If lectotypes and neotypes have been previously designated references are given to the place of designation. A few lectotypes are newly designated in this work, and each of these is appended 'by present designation' in the body of the catalogue. The expression 'Type(s)' is used for the few cases in which the type-material is lost or missing and it is not known from the original or later publications how many specimens formed the original series.

(2) *Sex of type.* When the actual sex of the primary type is the opposite of that cited in the original description the true sex is given first and the cited sex after it, in the following manner: 'Holotype ♂ [not ♀]'. Such cases are infrequent but occur now and then because of mis-recognition of sex by the earlier authors (e.g. Walker, who was frequently unable to sex Tachinidae correctly). No sex is cited at all in the very few instances in which no type-material has been found or seen and there is no evidence of sex derivable from the original description (e.g. *Linnaemyia nigripalpus* Tryon).

(3) *Type-locality.* In the citations of type-localities the larger territorial units are cited before smaller ones, with the main unit (the Australian state or territory, or if extra-Australian the country or island) shown in capital letters. If the true provenance of the type differs from that cited in the original description then

the true provenance is cited first and is followed by appropriate annotation in square brackets. If the published locality is suspect (e.g. because later collecting has not yielded specimens from the same area) but cannot be shown to be wrong then it is placed in inverted commas, e.g. 'TASMANIA'. Minor discrepancies between the data on a primary type and that shown in the original publication are suitably indicated if their importance warrants it. When citing type-localities that are known more precisely than usual the following abbreviations have been used: 'Is' = island; 'mls' = miles; 'mt' or 'mts' = mountain(s). Points of the compass are abbreviated as N., E., S. and W. and combined as necessary.

(4) *Type-depository and location.* These are shown in parentheses immediately after the type-locality, with the abbreviation for the depository museum given first and followed by the city. If a primary type is lost or has not been located this is stated in parentheses after the type-locality (sometimes with some amplifying words if pertinent). The abbreviations used for the museum depositories are as follows:

AM	Australian Museum, Sydney
AMNH	American Museum of Natural History, New York
ANIC	Australian National Insect Collection, Canberra
BMNH	British Museum (Natural History), London
CNC	Canadian National Collection, Ottawa
DEI	Deutsches Entomologisches Institut, Eberswalde
MHN	Musée d'Histoire Naturelle, Lille
MNHN	Muséum National d'Histoire Naturelle, Paris
MNHU	Museum für Naturkunde der Humboldt-Universität, Berlin
MRAC	Musée Royal de l'Afrique Centrale, Tervuren
MZ	Museo Zoologico 'La Specola', Florence
NM	Naturhistorisches Museum, Vienna
NMV	National Museum of Victoria, Melbourne
NR	Naturhistoriska Riksmuseum, Stockholm
NSWDA	New South Wales Department of Agriculture, Rydalmere
QM	Queensland Museum, Brisbane
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden
SPHTM	School of Public Health and Tropical Medicine, Sydney
USNM	United States National Museum, Washington D.C.
UZM	Universitetets Zoologiske Museum, Copenhagen
WADA	Western Australian Department of Agriculture, Perth
ZM	Zoologisch Museum, Amsterdam

(5) *Localities of extra-Australian type-species.* It may conveniently be noted here that statements of the original provenance of the type-species of genus-group names are given only for those names that are based on extra-Australian type-species. For example *Calozenillia* is based on a type-species from Sumatra, and the locality 'Sumatra' is therefore given in parentheses at the end of the generic entry. Localities are *not* given in the generic synonymies for the names

based on Australian type-species, as the latter are listed with their type-localities in the catalogue of species that accompanies each generic (or subgeneric) name.

GEOGRAPHICAL DISTRIBUTION. An attempt has been made to provide a brief synopsis of the known distribution of each species listed as *valid* in the catalogue. Geographical data is given to the level of state or territory for Australia itself, and to the level of island(s), country or zoogeographical region, as appropriate, for species that occur extra-limittally as well as in Australia. Australian distribution is given first, with the states listed alphabetically, followed by extra-limital distribution (if any); the extra-limital distribution is listed with the areas closest to Australia (e.g. New Guinea) first and more distant areas afterwards. If there is only doubtful evidence of the occurrence of a particular species in any Australian state, or if a published record from a state appears suspect, then the state(s) in question are listed at the end of the Australian distribution and are followed by a query mark: for example, *Blepharipa fulviventris* is recorded as from 'N.S.W., QLD, TASM. (?)', this format indicating that records from New South Wales and Queensland are considered confirmed but from Tasmania doubtful (if records from two or more states are doubtful then a query mark follows the entry for each such state). The abbreviations used for listing Australian states and territories are as follows:

A.C.T.	Australian Capital Territory	S.A.	South Australia
N.S.W.	New South Wales	TASM.	Tasmania
N.T.	Northern Territory	VICT.	Victoria
QLD	Queensland	W.A.	Western Australia

Lord Howe Island is listed separately from New South Wales and is not abbreviated.

NOMENCLATURAL CHANGES. It has been necessary to establish in the catalogue several new generic and specific synonymies, many new combinations for generically re-assigned species, and a few new names for preoccupied homonyms: a summary of these changes is provided on p. 157. The usual bold-face abbreviations have been used to signify these changes, viz. **Comb. n.** (new combination), **Nom. n.** (new name) and **Syn. n.** (new synonym). New combinations are only marked as such when considered taxonomically valid; species-group names that are assigned for the first time to a particular generic taxon are not marked as new combinations if they are also junior synonyms (as in these instances there are no valid new binomina in use). The abbreviation **Comb. n.** when given is placed after the type-locality data (which concludes the essentially nomenclatorial matter) and before the distributional data in the body of the catalogue, and each new taxonomically valid binomen is set out formally in the summary of new combinations (p. 158).

MISCELLANEOUS ANNOTATIONS. Whenever it is necessary or desirable to call attention to some specially pertinent point concerning a species-group name appearing in the catalogue (e.g. to elucidate points of homonymy, possible

whereabouts of types, mis-citations of dates, etc.) the additional annotation is given in a separate paragraph immediately following the main entry.

SYNOPSIS OF THE CATALOGUE ARRANGEMENT OF TRIBES AND GENERA

The following synopsis is given to show at a glance the arrangement of tribes and genera in the body of the catalogue. The genera listed are those considered valid at the present time. The affinities of several Australian genera are particularly obscure, and some have had to be assigned to tribes rather arbitrarily; likewise, the appropriate subfamily assignments of some tribes are doubtful. All such cases of doubtfully assigned genera and tribes are indicated by an asterisk (*) against the name; taxa so marked are in special need of study to ascertain their relationships more clearly.

Subfamily PHASIINAE

Tribe TRICHOPODINI

Pentatomophaga de Meijere
Saralba Walker

Tribe PHASIINI

Alophora Robineau-Desvoidy
Besserioides Curran
Efftayloria Malloch

Tribe CYLINDROMYIINI

Cylindromyia Meigen
Gerocyptera Townsend

Tribe LEUCOSTOMATINI

Leucostoma Meigen

Tribe EUTHERINI

Euthera Loew

Subfamily PROSENINAE (DEXIINAE)

Tribe PROSENINI

Acucera Malloch
Anatropomyia Malloch
Geraldia Malloch
Heterometopia Macquart*
Hobartia Malloch
Macropodexia Townsend
Ola Paramonov
Platytainia Macquart
Prosenia Le Peletier & Serville
Prosenina Malloch
Rutilotrixa Townsend
Senostoma Macquart
Trichostylum Macquart

Tribe RUTILIINI

Amphibolia Macquart
Chetogaster Macquart

Chrysopasta Brauer & Bergenstamm
Formosia Guérin-Méneville
Prodiaphania Townsend
Rutilia Robineau-Desvoidy

Subfamily TACHININAE (MACQUARTIINAE)

Tribe PALPOSTOMATINI*

Apalpostoma Malloch
Eustacomia Malloch
Palpostoma Robineau-Desvoidy

Tribe MYIOTRIXINI*

Myiotrixa Brauer & Bergenstamm

Tribe ORMIINI*

Therobia Brauer

Tribe GLAUROCARINI*

Doddiana Curran

Tribe CAMPYLOCHETINI

Elpe Robineau-Desvoidy

Tribe VORIINI

Hyleorus Aldrich
Hystricovoria Townsend
Voria Robineau-Desvoidy

Tribe THELAIRINI

Halydaia Egger
Thelaira Robineau-Desvoidy

Tribe MINTHOINI

Minthoxia Mesnil
Sumpigaster Macquart

Tribe NEMORAEINI

Nemoraea Robineau-Desvoidy

Tribe LESKIINI

Apatemyia Macquart
Demoticoides Mesnil
Exechopalpus Macquart
Rhinomyobia Brauer & Bergenstamm
Sipholeskia Townsend
Toxocnemis Macquart

Tribe ERNESTIINI

Amphitropesa Townsend*
Chlorotachina Townsend
Macrochloria Malloch
Neximyia Crosskey*

Tribe PARERIGONINI*

Australotachina Curran*
Leverella Baranov
Pygidimyia Crosskey
Zita Curran

Tribe LINNAEMYINI

Apalpus Malloch
Chaetophthalmus Brauer & Bergenstamm
Linnaemya Robineau-Desvoidy

Tribe TACHININI

Cuphocera Macquart
Eristaliomyia Townsend
Microtropesa Macquart

Subfamily GONIINAE

Tribe ACEMYINI

Ceracia Rondani

Tribe NEAERINI

Voriella Malloch

Tribe SIPHONINI (ACTIINI)

Actia Robineau-Desvoidy
Ceromya Robineau-Desvoidy
Peribaea Robineau-Desvoidy

Tribe BLONDELIINI

Anagonia Brauer & Bergenstamm
Compsilura Bouché
Deltomyza Malloch
Froggattimyia Townsend
Lecaniipa Rondani
Lixophaga Townsend
Medinodexia Townsend
Monoleptophaga Baranov
Pareupogona Townsend
Paropsivora Malloch
Pilimyia Malloch
Trigonospila Pokorný
Zenargomyia Crosskey
Zosteromeigenia Townsend

Tribe EXORISTINI

Austrophorocera Townsend
Chaetoria Becker
Eozenillia Townsend
Exorista Meigen
Hillomyia Crosskey nom. n.
Spoggosia Rondani
Stomatomyia Brauer & Bergenstamm

Tribe ETHILLINI

Ethilla Robineau-Desvoidy
Mycteromyiella Mesnil*
Phorocerosoma Townsend

Tribe WINTHEMIINI

Crypsina Brauer & Bergenstamm
Nemorilla Rondani
Winthemia Robineau-Desvoidy

Tribe CARCELIINI

Argyrophylax Brauer & Bergenstamm
Argyrothelaira Townsend
Carcelia Robineau-Desvoidy
Carcelimyia Mesnil

Tribe ANACAMPTOMYIINI

Anacamptomyia Bischof
Euvespivora Baranov
Koralliomysia Mesnil*

Tribe STURMIINI

Anamastax Brauer & Bergenstamm
Arrhenomyza Malloch
Blepharella Macquart
Blepharipa Rondani
Calozenillia Townsend
Eurygastropsis Townsend
Palexorista Townsend
Palia Curran*
Paliana Curran*
Paradrino Mesnil
Paragonia Mesnil
Polychaeta Macquart
Quadra Malloch
Sisyropa Brauer & Bergenstamm
Sturmia Robineau-Desvoidy
Tasmaniomysia Townsend
Tritaxys Macquart
Ugimeigenia Townsend
Winthellia Crosskey
Zebromysia Malloch
Zygobothria Mik

Tribe GONIINI

Goniophthalmus Villeneuve
Pseudogonia Brauer & Bergenstamm

Tribe ERYCIINI

Aplomya Robineau-Desvoidy
Aprotheca Macquart
Austronilea Crosskey
Austrophryno Townsend
Bactromyiella Mesnil*
Chlorogastropsis Townsend
Erythroceras Robineau-Desvoidy
Metaphryno Crosskey
Phorocerosoma Malloch
Pseudalsomyia Mesnil
Teretrophora Macquart

THE TAXONOMIC CATALOGUE

Family **TACHINIDAE** Robineau-Desvoidy

TACHINARIAE Robineau-Desvoidy, 1830 : 185. Type-genus: *Tachina* Meigen, 1803.

Subfamily **PHASIINAE** Robineau-Desvoidy

PHASIANEAE Robineau-Desvoidy, 1830 : 280. Type-genus: *Phasia* Latreille, 1804.

Tribe **TRICHOPODINI** Townsend

TRICHOPODINI Townsend, 1908 : 129. Type-genus: *Trichopoda* Latreille, 1825.

Genus **PENTATOMOPHAGA** de Meijere

Pentatomophaga de Meijere, 1917 : 246. Type-species: *Pentatomophaga bicincta* de Meijere, 1917, by monotypy. (JAVA).

bicincta de Meijere, 1917 : 247. Holotype ♀, JAVA (ZM, Amsterdam) [examined].—QLD; JAVA; NEW BRITAIN.

Genus **SARALBA** Walker

Saralba Walker, 1865 : 114. Type-species: *Saralba ocypteroides* Walker, 1865, by monotypy. (NEW GUINEA).

Pseudotrichopoda Malloch, 1933a : 77. Type-species: *Pseudotrichopoda varipes* Malloch, 1933 [= *Saralba ocypteroides* Walker, 1865], by original designation.

bancrofti Paramonov, 1956 : 373. Holotype ♂, QUEENSLAND, Eidsvold (ANIC, Canberra) [examined].—QLD. (Probably = *ocypteroides*).

ocypteroides Walker, 1865 : 114. Holotype ♂, NEW GUINEA (BMNH, London) [examined].—QLD; NEW GUINEA.

varipes Malloch, 1933a : 78 (*Pseudotrichopoda*). Holotype ♂, QUEENSLAND, Cairns (DEI, Eberswalde) [examined].

Tribe **PHASIINI** Robineau-Desvoidy

PHASIANEAE Robineau-Desvoidy, 1830 : 280. Type-genus: *Phasia* Latreille, 1804.

Genus **ALOPHORA** Robineau-Desvoidy

Alophora Robineau-Desvoidy, 1830 : 293. Type-species: *Syrphus hemipterus* Fabricius, 1794, by subsequent designation of Coquillett (1910 : 505). (EUROPE).

Alophora. Incorrect subsequent spelling of *Alophora* Robineau-Desvoidy.

Subgenus **ALOPHORELLA** Townsend

Alophorella Townsend, 1912 : 45. Type-species: *Thereva obesa* Fabricius, 1798, by original designation. (EUROPE).

Austrophasia Townsend, 1916f : 45. Type-species: *Hyalomya rufiventris* Macquart, 1851, by original designation.

- aureiventris** Curran, 1927a : 165. Holotype ♂, QUEENSLAND: Biloela (BMNH, London) [examined]. – QLD.
- chrysis** Malloch, 1930a : 95 (*Hyalomyia*). Holotype ♂, WESTERN AUSTRALIA: Narragin (SPHTM, Sydney) [examined]. **Comb. n.** – W.A.
- costalis** Malloch, 1929 : 284 (*Hyalomyia*). Holotype ♂, NEW SOUTH WALES: Woodford (ANIC, Canberra) [examined]. **Comb. n.** – N.S.W.
- discalis** Malloch, 1930a : 95 (*Hyalomyia*). Holotype ♂, WESTERN AUSTRALIA: Geraldton (SPHTM, Sydney). **Comb. n.** – W.A., QLD (?), TASM. (?).
- rufiventris** Macquart, 1851 : 188 (215) (*Hyalomyia*). Holotype ♂, 'TASMANIA' (MNHN, Paris) [examined]. – TASM. (?).

Subgenus **HYALOMYA** Robineau-Desvoidy

- Hyalomya* Robineau-Desvoidy, 1830 : 298 (as genus). Type-species: *Phasia semicinerea* Meigen, 1824 [= *Phasia pusilla* Meigen, 1824], by subsequent designation of Westwood (1840 : 140). (EUROPE).
- Hyalomyia*. Incorrect subsequent spelling of *Hyalomya* Robineau-Desvoidy.
- normalis** Curran, 1927b : 355 (*Strongylogaster*). Holotype ♀, QUEENSLAND: Palmerston (DEI, Eberswalde) [examined]. **Comb. n.** – QLD.

Subgenus **MORMONOMYIA** Brauer & Bergenstamm

- Mormonomyia* Brauer & Bergenstamm, 1891 : 388 (84) (as genus). Type-species: *Mormonomyia laniventris* Brauer & Bergenstamm, 1891 [= *Phasia argentifrons* Walker, 1849], by subsequent designation of Townsend (1916a : 8). (SOUTH AFRICA).
- basalis** Malloch, 1930a : 96 (*Hyalomyia*). Holotype ♂, NEW SOUTH WALES: Wahrenonga (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- hyalis** Malloch, 1930a : 96 (*Hyalomyia*). Holotype ♂, NEW SOUTH WALES: Como (USNM, Washington) [examined]. **Comb. n.** – N.S.W.
- lativentris** Malloch, 1929a : 110 (*Hyalomyia*). Holotype ♂, QUEENSLAND: Cairns (USNM, Washington) [examined]. **Comb. n.** – QLD.
- lepidofera** Malloch, 1929a : 111 (*Hyalomyia*). Holotype ♂, NEW SOUTH WALES: Como (USNM, Washington) [examined]. **Comb. n.** – N.S.W.
- nigrihirta** Malloch, 1929a : 112 (*Hyalomyia*). Holotype ♂, VICTORIA: Seaford (USNM, Washington) [examined]. **Comb. n.** – QLD, VICT.
- sensua** Curran, 1927b : 354 (*Strongylogaster*). Holotype ♀, QUEENSLAND: Palmerston (DEI, Eberswalde) [examined]. **Comb. n.** – QLD.

Subgenerically unplaced species of *Alophora* s.l.

- hippobosca** Paramonov, 1958 : 594 (*Hyalomyia*). Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra (ANIC, Canberra) [examined]. **Comb. n.** – A.C.T., VICT.

This species is close to subgenus *Alophorella* but the parafrontals are bare outside the frontal rows; it comes closest to the Palaearctic subgenus *Phoranthia* Rondani.

- nigrisquama** Malloch, 1929a : 110 (*Hyalomyia*). Holotype ♂, NEW SOUTH WALES: N. Sydney, French's Forest (AM, Sydney) [examined]. **Comb. n.** – N.S.W.

This species has the face and epistome flat in profile and the subgenus is uncertain. It comes closest to the Palaearctic subgenus *Brumptalophora* Dupuis.

Genus **BESSERIOIDES** Curran

- Besserioides* Curran, 1938 : 185. Type-species: *Besserioides sexualis* Curran, 1938 [= *Catharosia varicolor* Curran, 1927], by original designation.

- bancrofti** Paramonov, 1958 : 597. Holotype ♂, QUEENSLAND, Palm Is. (ANIC, Canberra) [examined]. – QLD.
- latifrons** Paramonov, 1958 : 596. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY, Bendora. (ANIC, Canberra) [examined]. – A.C.T.
- varicolor** Curran, 1927a : 165 (*Catharosia*). Holotype ♂, QUEENSLAND, Bileola (BMNH, London) [examined]. – QLD.
- sexualis** Curran, 1938 : 185. Holotype ♂, QUEENSLAND, Laidley (BMNH, London) [examined]. – **Syn. n.**

Genus *EFFTAYLORIA* Malloch

- Tayloria* Malloch, 1930a : 98. Type-species: *Tayloria testacea* Malloch, 1930, by original designation. [Junior homonym of *Tayloria* Bourguignat, 1889.]
- Efftayloria* Malloch, 1941 : 64. [Replacement name for *Tayloria* Malloch.]
- testacea** Malloch, 1930a : 98 (*Tayloria*). Holotype ♂, QUEENSLAND, Mt Molloy (SPHTM, Sydney) [examined]. – QLD. (Possibly = *ochromyoides* Walker, 1865, New Guinea).

Tribe CYLINDROMYIINI Townsend

CYLINDROMYIINI Townsend, 1912 : 48. Type-genus: *Cylindromyia* Meigen, 1803.

Genus *CYLINDROMYIA* Meigen

- Cylindromyia* Meigen, 1803 : 279. Type-species: *Musca brassicaria* Fabricius, 1775, by monotypy. (EUROPE).
- Ocypteropsis* Townsend, 1916b : 630. Type-species: *Ocyptera flavifrons* Macquart, 1851 [= *Ocyptera bimacula* Walker, 1849], by original designation. [*Ocyptera* Latreille sensu authors (misidentification)]
- angustissimifrons** Paramonov, 1956 : 365. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Mt Gingera (ANIC, Canberra) [examined]. – A.C.T.
- aterrima** Paramonov, 1956 : 361. Holotype ♂, QUEENSLAND: Scotsville (ANIC, Canberra) [examined]. – QLD.
- atratula** Malloch, 1930b : 314. Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- bicolor** Bigot, 1885c : 1v (*Glossidionophora*). Holotype ♀, AUSTRALIA (BMNH, London) [examined]. – State unknown.
- C. bicolor* Bigot is a junior secondary homonym of *C. bicolor* Olivier, 1811. No new name is proposed at the present time.
- bimacula** Walker, 1849 : 694 (*Ocyptera*). Holotype ♂, TASMANIA (BMNH, London) [examined]. – A.C.T., N.S.W., S.A., TASM., W.A.
- flavifrons** Macquart, 1851 : 187 (214) (*Ocyptera*). Lectotype ♂ (by designation of Crosskey, 1971 : 280), TASMANIA (MNHN, Paris) [examined]. **Syn. n.**
- brunnea** Malloch, 1930b : 315. Holotype ♂, WESTERN AUSTRALIA: Perth (ANIC, Canberra) [examined]. – W.A.
- dayi** Paramonov, 1956 : 369. Holotype ♂, NEW SOUTH WALES: Killara (ANIC, Canberra) [examined]. – N.S.W.
- fenestrata** Paramonov, 1956 : 363. Holotype ♂, QUEENSLAND: Gayndah (AM, Sydney) [examined]. – QLD.
- hobartana** Paramonov, 1956 : 368. Holotype ♂, TASMANIA: Hobart (ANIC, Canberra) [examined]. – TASM.
- howeana** Paramonov, 1956 : 364. Holotype ♂, LORD HOWE ISLAND (ANIC, Canberra) [examined]. – LORD HOWE I.

- nigricosta** Malloch, 1930b : 312. Holotype ♂ [two wings only remaining], NEW SOUTH WALES: Kosciusko (SPHTM, Sydney) [examined]. – N.S.W.
- rieki** Paramonov, 1956 : 370. Holotype ♂, TASMANIA: Eagle Hawk Neck (ANIC, Canberra) [examined]. – TASM.
- rufifemur** Paramonov, 1956 : 366. Holotype ♂, NEW SOUTH WALES: Salisbury Downs-Clifton Downs (ANIC, Canberra) [examined]. – N.S.W., QLD.
- sydneyensis** Malloch, 1930b : 314. Holotype ♀, NEW SOUTH WALES: Sydney (ANIC, Canberra) [examined]. – N.S.W.
- tricolor** Malloch, 1930b : 315. Holotype ♀, NEW SOUTH WALES: Killara, Allowrie (SPHTM, Sydney) [examined]. – N.S.W.
- unguiculata** Paramonov, 1956 : 370. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. – A.C.T., QLD., W.A.
- westralica** Paramonov, 1956 : 367. Holotype ♂, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined]. – W.A.

Genus **GEROCYPTERA** Townsend

- Gerocyptera* Townsend, 1916e : 178. Type-species: *Trichoprosopa marginalis* Walker, 1860, by original designation. (MOLUCCAS).
- tristis** Bigot, 1878 : 45 (*Ocyptera*). Holotype ♂, 'AUSTRALIA' (BMNH, London) [examined].
Comb. n. – AUSTRALIA (?).

Tribe **LEUCOSTOMATINI** Townsend

- LEUCOSTOMINI Townsend, 1908 : 76. Type-genus: *Leucostoma* Meigen, 1803.

Genus **LEUCOSTOMA** Meigen

- Leucostoma* Meigen, 1803 : 279. Type-species: *Ocyptera simplex* Fallén, 1815, by subsequent monotypy (Meigen, 1824 : 234). (EUROPE).
- Aequia* Malloch, 1930b : 325. Inadvertent error for *Leucostoma*, published in the statement 'The preceding genus, *Aequia*, is distinguished from the present one [*Hyalomyodes*] by the strong erect ocellar bristles, and the wing venation'. Here held to be a name first published as a synonym and unavailable under Article 11(d) of the *International Code of Zoological Nomenclature*. (See also Townsend, 1938 : 189).
- simplex** Fallén, 1815 : 240 (*Ocyptera*). Holotype ♀, SWEDEN: Kalmar (NR, Stockholm) [examined]. – N.S.W.; widespread Holarctic regions, also Neotropical region.

Tribe **EUTHERINI** Townsend

- EUTHERINI Townsend, 1912 : 49. Type-genus: *Euthera* Loew, 1866.

Genus **EUTHERA** Loew

- Euthera* Loew, 1866 : 46. Type-species: *Euthera tentatrix* Loew, 1866, by monotypy. (UNITED STATES OF AMERICA).
- Macreuthera* Bezzi, 1925 : 281 (as subg. of *Euthera*). Type-species: *Euthera skusei* Bezzi, 1925, by original designation.
- rieki** Paramonov, 1953 : 207. Holotype ♂, QUEENSLAND: Warri Border Gate-Narylco (ANIC, Canberra) [examined]. – QLD.

skusei Bezzi, 1925 : 281. Holotype ♀, QUEENSLAND: Eidsvold (whereabouts unknown, possibly lost). – QLD.

Holotype should be in SPHTM, Sydney, but has not been located.

Unplaced species of Phasiinae

australasiae Malloch, 1930b : 325 (*Hyalomyodes*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

Placed by Malloch in New World genus *Hyalomyodes* Townsend but probably does not belong there.

Subfamily PROSENINAE Townsend

PROSENINAE Townsend, 1892b : 273. Type-genus: *Prosenia* Le Peletier & Serville, 1828.

Tribe PROSENINI Townsend

PROSENINAE Townsend, 1892b : 273. Type-genus: *Prosenia* Le Peletier & Serville, 1828.

Genus ACUCERA Malloch

Acucera Malloch, 1930b : 328. Type-species: *Acucera montana* Malloch, 1930, by original designation.

montana Malloch, 1930b : 328. Holotype ♂, NEW SOUTH WALES: Blue Mts (SPHTM, Sydney) [examined]. – N.S.W.

Genus ANATROPOMYIA Malloch

Anatropomyia Malloch, 1930a : 126. Type-species: *Anatropomyia flavicornis* Malloch, 1930, by original designation.

flavicornis Malloch, 1930a : 127. Holotype ♂, NEW SOUTH WALES: Ilford (SPHTM, Sydney) [examined]. – N.S.W.

Genus GERALDIA Malloch

Geraldia Malloch, 1930b : 327. Type-species: *Geraldia hirticeps* Malloch, 1930, by original designation.

hirticeps Malloch, 1930b : 328. Holotype ♂, WESTERN AUSTRALIA: Geraldton (SPHTM, Sydney) [examined]. – S.A., W.A.

Genus HETEROMETOPIA Macquart

Heterometopia Macquart, 1846 : 298 (170). Type-species: *Heterometopia argentea* Macquart, 1846, by monotypy.

Cystometopia Townsend, 1926 : 531. Type-species: *Heterometopia rufipalpis* Macquart, 1847 [= *Heterometopia argentea* Macquart, 1846], by original designation.

- argentea** Macquart, 1846 : 298 (170). Lectotype ♂ (by designation of Crosskey, 1971 : 271), TASMANIA (MNHN, Paris) [examined]. – TASM.
limbineuris [sic] Macquart, 1846 : 317 (189) (*Omalogaster*). Holotype ♀ [not ♂], TASMANIA (MNHN, Paris) [examined]. **Syn. n.**
nitidus Macquart, 1846 : 318 (190) (*Omalogaster*). Type(s), TASMANIA (lost). **Syn. n.**
rufipalpis Macquart, 1847 : 90 (74). Holotype ♂ [not ♀], AUSTRALIA (BMNH, London) [examined]. **Syn. n.**
analis Macquart, 1851 : 182 (209). Lectotype ♀ (by designation of Crosskey, 1971 : 271), TASMANIA (MNHN, Paris) [examined].
bella Paramonov, 1960 : 692. Holotype ♂, NEW SOUTH WALES: 10 mls SE of Braidwood (ANIC, Canberra) [examined]. – A.C.T., N.S.W.
montana Paramonov, 1960 : 693. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Bendora (ANIC, Canberra) [examined]. – A.C.T., N.S.W., VICT.

Genus *HOBARTIA* Malloch

- Hobartia* Malloch, 1930a : 127. Type-species: *Hobartia peculiaris* Malloch, 1930, by original designation.
peculiaris Malloch, 1930a : 127. Holotype ♂, TASMANIA: Hobart (ANIC, Canberra) [examined]. – TASM.

Genus *MACROPODEXIA* Townsend

- Macropodexia* Townsend, 1933 : 462. Type-species: *Dexia longipes* Macquart, 1846, by original designation.
longipes Macquart, 1846 : 315 (187) (*Dexia*). Lectotype ♂ (by designation of Crosskey, 1971 : 266), TASMANIA (MNHN, Paris) [examined]. – N.S.W., TASM., VICT.

Genus *OLA* Paramonov

- Ola* Paramonov, 1968 : 377. Type-species: *Rutilia nigrithorax* Macquart, 1851, by original designation.
erasmusi Paramonov, 1968 : 381. Holotype ♂, VICTORIA: Warburton (NMV, Melbourne). – VICT.
insectaria Paramonov, 1968 : 380. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra (ANIC, Canberra). – A.C.T., N.S.W.
nigrithorax Macquart, 1851 : 190 (217) (*Rutilia*). Lectotype ♂ (by designation of Crosskey, 1971 : 288), AUSTRALIA [publ. as 'Oceania'] (MNHN, Paris) [examined]. – A.C.T., N.S.W., TASM., VICT.
wilsoni Paramonov, 1954 : 281 (*Chaetogaster*). Holotype ♂, NEW SOUTH WALES: Blackheath (NMV, Melbourne). – N.S.W., VICT.

Genus *PLATYTAINIA* Macquart

- Platytaenia* Macquart, 1851 : 178 (205). Type-species: *Platytaenia maculata* Macquart, 1851, by monotypy.
maculata Macquart, 1851 : 179 (206). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. – N.S.W., TASM. (?).

Genus **PROSENA** Le Peletier & Serville

Calirrhoe Meigen, 1800 : 39. [Name suppressed by I.C.Z.N. Opinion 678 (1963 : 339)]

Prosenia Le Peletier & Serville, 1828 : 499, 500. Type-species: *Stomoxys siberita* Fabricius, 1775, by original designation. (DENMARK).

arcuata Malloch, 1932a : 129. Holotype ♂, NEW SOUTH WALES: Killara, Allowrie (SPHTM Sydney) [examined]. – N.S.W.

argentata Curran, 1927b : 348. Holotype ♂, QUEENSLAND: Kuranda (DEI, Eberswalde). – QLD.

P. argentata Curran is a junior primary homonym of *P. argentata* Walker, 1859. No new name is proposed at the present time.

bella Curran, 1927b : 349. Holotype ♂, QUEENSLAND: Cairns (DEI, Eberswalde). – QLD.

bisetosa Malloch, 1932a : 130. Holotype ♂, QUEENSLAND: Cairns district (SPHTM, Sydney) [examined]. – QLD., N.S.W. (?).

conica Guérin-Méneville, 1831 : Plate 21, fig. 7, 7A; 1838 : 298. Holotype ♂, NEW SOUTH WALES: Port Jackson (=Sydney) (MNHN, Paris) [examined]. – N.S.W., QLD.

albifrons Malloch, 1932a : 132. Holotype ♂, QUEENSLAND: Eidsvold (not located). **Syn. n.** [*argentata* Curran sensu Malloch, 1930 (misidentification)]

dimidiata Curran, 1938 : 188. Holotype ♀, QUEENSLAND: Kuranda (SPHTM, Sydney) [examined]. – QLD.

dispar Macquart, 1851 : 203 (230). Lectotype ♀ (by designation of Crosskey, 1971 : 284), 'TASMANIA' (MNHN, Paris) [examined]. – N.S.W., TASM. (?).

doddi Curran, 1927b : 347. Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde). – N.T., QLD. (= *siberita* Fabricius according to Malloch, 1932a : 131).

dorsalis Macquart, 1847 : 97 (81). Holotype ♂, TASMANIA (BMNH, London) [examined]. – N.S.W., TASM.

parva Malloch, 1930a : 115. Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. **Syn. n.**

jactans Walker, 1858 : 210 (*Pachymyia*). Holotype ♀ [? AUSTRALIA] (BMNH, London) [examined]. – N.S.W., QLD.

macropus Thomson, 1869 : 531. Holotype ♂, NEW SOUTH WALES: Sydney (NR, Stockholm) [examined]. – N.S.W., TASM.

indecis Malloch, 1930a : 116. Holotype ♂, NEW SOUTH WALES: Barrington Tops (not located). **Syn. n.**

Paratypes undoubtedly conspecific with missing holotype are in USNM, Washington, and SPHTM, Sydney [examined].

malayana Townsend, 1926a : 25 (*Calirrhoe*). Lectotype ♂ (by designation of Crosskey, 1969 : 91), SUMATRA: Fort de Kock (ZM, Amsterdam) [examined]. – QLD.; widespread S.E. ASIA. (Possibly = *siberita*).

P. malayana was considered by Curran (1938 : 189) to be a senior synonym of *P. doddi*. Evidence is inconclusive.

marginalis Curran, 1938 : 189. Holotype ♂, QUEENSLAND: Brisbane (SPHTM, Sydney) [examined]. – QLD.

nigripes Curran, 1927b : 347. Holotype ♂, QUEENSLAND: Palmerston (DEI, Eberswalde). – N.T., QLD. (Probably = *malayana*).

rufiventris Macquart, 1847 : 96 (80). Holotype ♀, 'TASMANIA' (BMNH, London) [examined]. – QLD., TASM. (?).

siberita Fabricius, 1775 : 798 (*Stomoxys*). Type(s), DENMARK: Copenhagen (lost). – N.S.W., QLD.; widespread EUROPE and ASIA. (Possibly misidentified from Australia)

sibirita. Incorrect subsequent spelling of *siberita* Fabricius.

confusa Malloch, 1930a : 115 (as var. of *siberita*). Holotype ♂, QUEENSLAND: Eidsvold (SPHTM, Sydney) [examined].

surda Curran, 1938 : 190. Holotype ♂, QUEENSLAND: Kuranda (BMNH, London, ex coll. Wainwright) [examined]. – N.S.W., QLD., W.A.

- tenuis** Malloch, 1930a : 114. Holotype ♂, NEW SOUTH WALES: Gundamain National Park (SPHTM, Sydney) [examined]. – N.S.W., QLD. (?).
- varia** Curran, 1929 : 509. Holotype ♂, NEW SOUTH WALES (not located). – N.S.W.
- variegata** Curran, 1929 : 509. Holotype ♂, QUEENSLAND: Gravesend (SPHTM, Sydney) [examined]. – QLD.
- vittata** Guérin-Méneville, 1838 : 299. Holotype ♀, NEW SOUTH WALES: Port Jackson (=Sydney) (MNHN, Paris) [examined]. – N.S.W.
- vittata** Macquart, 1843 : 249 (92). Holotype ♀, NEW SOUTH WALES: Port Jackson (=Sydney) (MNHN, Paris) [examined]. Junior primary homonym and junior objective synonym of *P. vittata* Guérin-Méneville.

It is considered certain (Crosskey, 1971 : 284–285) that Macquart described his *P. vittata* from the same female specimen from Port Jackson that Guérin-Méneville had already used as the basis of his *P. vittata*, Macquart apparently being unaware of Guérin-Méneville's description. *P. vittata* Macquart has therefore the status of a junior objective synonym and junior homonym of *P. vittata* Guérin-Méneville.

Macquart (1843 : 249) considered that *vittata* might be the female of *P. conica* Guérin-Méneville. As the male holotype of *conica* and the female holotype of *vittata* (both from Port Jackson) are mounted and labelled exactly similarly it is almost certain that they were collected at the same time, and probable that the sexes associate. Synonymy is not established at present.

Genus **PROSENINA** Malloch

- Prosenina* Malloch, 1930a : 116. Type-species: *Prosenina nicholsoni* Malloch, 1930, by original designation.
- nicholsoni** Malloch, 1930a : 116. Holotype ♂, NEW SOUTH WALES: Gundamain National Park (ANIC, Canberra) [examined]. – N.S.W., TASM., W.A.

Genus **RUTILOTRIXA** Townsend

- Rutilotrix* Townsend, 1933 : 448. Type-species: *Trixa lateralis* Walker, 1849, by original designation.
- Ruya* Paramonov, 1968 : 381. Type-species: *Chaetogaster diversa* Paramonov, 1954, by original designation. **Syn. n.**
- diversa** Paramonov, 1954 : 280 (*Chaetogaster*). Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. **Comb. n.** – A.C.T., N.S.W., VICT. (Probably = *lateralis*).
- lateralis** Walker, 1849 : 698 (*Trixa*). Holotype ♀, [AUSTRALIA] (BMNH, London) [examined]. – AUSTRALIA (state unknown, probably N.S.W.).
- No locality was given in the original description; Townsend (1933 : 448) rightly cited Australia from evidence at the BMNH.
- monstruosa** Paramonov, 1968 : 383 (*Ruya*). Holotype ♀, NEW SOUTH WALES: Buraja (ANIC, Canberra). **Comb. n.** – N.S.W.
- westralica** Paramonov, 1968 : 382 (*Ruya*). Holotype ♂, WESTERN AUSTRALIA: Pinjarra (ANIC, Canberra). **Comb. n.** – W.A.

Genus **SENOTOMA** Macquart

- Senostoma* Macquart, 1847 : 96 (80). Type-species: *Senostoma variegata* Macquart, 1847, by monotypy.
- Rhynchiodexia* Bigot, 1885a : xi. Type-species: *Rhynchiodexia tenuipes* Bigot, 1885, by monotypy. (NEW CALEDONIA). **Syn. n.**

- Austrodexia* Malloch, 1930a : 122. Type-species: *Austrodexia setigera* Malloch, 1930, by original designation. **Syn. n.**
- Lasiocalypter* Malloch, 1930a : 119. Type-species: *Lasiocalypter flavohirta* Malloch, 1930, by original designation. **Syn. n.**
- Lasiocalyptrina* Malloch, 1930a : 122. Type-species: *Lasiocalyptrina modesta* Malloch, 1930, by original designation. **Syn. n.**
- apicale** Curran, 1938 : 193 (*Lasiocalypter*). Holotype ♂, NEW SOUTH WALES: Jenolan caves (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- appendiculatum** Macquart, 1851 : 202 (229) (*Dexia*). Holotype ♂, 'TASMANIA' (MNHN, Paris) [examined]. **Comb. n.** – N.S.W., QLD, TASM. (?).
- punctum** Walker, 1858 : 205. Lectotype ♂ [not ♀] (by present designation), NEW SOUTH WALES (BMNH, London) [examined]. **Syn. n.**
- atripes** Malloch, 1930a : 121 (*Lasiocalypter*). Holotype ♂, NEW SOUTH WALES: Blue Mts (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- basale** Curran, 1938 : 193 (*Lasiocalypter*). Holotype ♂, QUEENSLAND: Macpherson Range, Roberts Plateau (SPHTM, Sydney) [examined]. **Comb. n.** – QLD.
- brevipalpe** Macquart, 1846 : 317 (189) (*Omalogaster*). Lectotype ♂ (by designation of Crosskey, 1971 : 280), TASMANIA (MNHN, Paris) [examined]. **Comb. n.** – TASM.
- brevipalpe** Rondani, 1864 : 22 (*Dexia*). Type(s), AUSTRALIA (not located, probably lost). **Comb. n.** – AUSTRALIA (state unknown).
- S. brevipalpe* Rondani is a junior secondary homonym of *S. brevipalpe* Macquart. No new name is proposed at the present time.
- commune** Malloch, 1930a : 125 (*Austrodexia*). Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra (ANIC, Canberra) [examined]. **Comb. n.** – A.C.T., N.S.W., QLD.
- flavohirtum** Malloch, 1930a : 121 (*Lasiocalypter*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- hirticauda** Malloch, 1930a : 120 (*Lasiocalypter*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- hyria** Walker, 1849 : 843 (*Dexia*). Type(s), SOUTH AUSTRALIA: Adelaide (lost). **Comb. n.** – S.A.
- mixtum** Malloch, 1930a : 126 (*Austrodexia*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- modestum** Malloch, 1930a : 122 (*Lasiocalyptrina*). Holotype ♂, VICTORIA: Gisborne (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., TASM., VICT.
- nigrihirtum** Malloch, 1930a : 119 (*Lasiocalypter*). Holotype ♂, NEW SOUTH WALES: Kosciusko [publ. as 'Barrington Tops'] (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., VICT.
- notatum** Walker, 1852 : 309 (*Dexia*). Holotype ♀, NEW SOUTH WALES (BMNH, London) [examined]. **Comb. n.** – N.S.W., VICT.
- pallidihirtum** Malloch, 1930a : 126 (*Austrodexia*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- punctipenne** Macquart, 1846 : 315 (187) (*Dexia*). Holotype ♂, AUSTRALIA (BMNH, London) [examined]. **Comb. n.** – AUSTRALIA (state unknown).
- pictipennis*. Incorrect subsequent spelling (lapsus for *punctipennis* by Malloch, 1930a : 123). Malloch (1930a : 124) reports this species from N.S.W. and W.A. but his identification (as '*pictipennis*') needs confirmation.
- rubricarinatum** Macquart, 1846 : 315 (187) (*Dexia*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Comb. n.** – TASM.
- setigerum** Malloch, 1930a : 124 (*Austrodexia*). Holotype ♂, NEW SOUTH WALES: Woy Woy (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., QLD.
- setiventris** Malloch, 1930a : 126 (*Austrodexia*). Holotype ♂, NEW SOUTH WALES: Glenreagh (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., QLD.
- taylori** Curran, 1938 : 191 (*Austrodexia*). Holotype ♀, QUEENSLAND: Kuranda (SPHTM, Sydney) [examined]. **Comb. n.** – QLD.

- tessellatum** Macquart, 1851 : 202 (229) (*Dexia*). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. **Comb. n.** – TASM. (?).
- testaceicorne** Macquart, 1851 : 201 (228) (*Dexia*). Holotype ♂, TASMANIA [publ. as 'Oceania'] (MNHN, Paris) [examined]. **Comb. n.** – TASM.
- unipunctum** Malloch, 1930a : 126 (*Austrodexia*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.
- variegatum** Macquart, 1847 : 96 (80) (as *variegata*). Holotype ♀, TASMANIA (BMNH, London) [examined]. – N.S.W., TASM.

Genus *TRICHOSTYLUM* Macquart

- Trichostylum* Macquart, 1851 : 181 (208). Type-species: *Trichostylum rufipalpis* Macquart, 1851, by monotypy.
- rufipalpe** Macquart, 1851 : 182 (209) (as *rufipalpis*). Holotype ♀, AUSTRALIA (MNHN, Paris) [examined]. – AUSTRALIA (state unknown; publ. as 'côte orientale', prob. N.S.W. or QLD).

Tribe RUTILIINI Brauer & Bergenstamm

- RUTILIIDAE Brauer & Bergenstamm, 1889 : 76, 152. Type-genus: *Rutilia* Robineau-Desvoidy, 1830.

Genus *AMPHIBOLIA* Macquart

- Amphibolia* Macquart, 1843 : 278 (121). Type-species: *Amphibolia valentina* Macquart, 1843, by original designation.

Subgenus *AMPHIBOLIA* Macquart

- Amphibolia* Macquart, 1843 : 278 (121). Type-species: *Amphibolia valentina* Macquart, 1843, by original designation.
- albicincta** Malloch, 1930a : 108 (*Rutilia*). Holotype ♀, NEW SOUTH WALES: Barrington Tops (ANIC, Canberra) [examined]. – A.C.T., N.S.W.
- campbelli** Paramonov, 1950 : 523. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. – A.C.T., N.S.W., VICT.
- communi** Paramonov, 1968 : 363. Holotype ♀, VICTORIA: Grampians, Fyan's Creek (ANIC, Canberra). – N.S.W., VICT.
- ignorata** Paramonov, 1950 : 522. Holotype ♂, NEW SOUTH WALES: Tindery (ANIC, Canberra) [examined]. – A.C.T., N.S.W., S.A., VICT., W.A.; LORD HOWE I.
- valentina** Macquart, 1843 : 279 (122). Type(s) ♂, AUSTRALIA (MHN, Lille). – N.S.W., QLD., TASM., VICT., W.A.
- vidua* Guérin-Méneville, 1843 : 273 (*Rutilia*). Syntypes (1 ♂, 3 ♀), AUSTRALIA (lost).
- wilsoni** Paramonov, 1950 : 524. Holotype ♂, VICTORIA: Warburton (NMV, Melbourne). – VICT.

Subgenus *PARAMPHIBOLIA* Brauer & Bergenstamm

- Paramphibolia* Brauer & Bergenstamm, 1891 : 389 (85) (as genus). Type-species: *Rutilia assimilis* Macquart, 1851, by monotypy.
- Chaetogastrina* Malloch, 1929b : 313. Type-species: *Chaetogastrina stolidia* Malloch, 1929, by original designation.
- assimilis** Macquart, 1851 : 192 (219) (*Rutilia*). Lectotype ♂ (by designation of Crosskey, 1971 : 285), TASMANIA (MNHN, Paris) [examined]. – TASM., VICT.
- stolidia** Malloch, 1929b : 313 (*Chaetogastrina*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (AM, Sydney) [examined]. – N.S.W.

Genus *CHETOGASTER* Macquart

- Chetogaster* Macquart, 1851 : 198 (225). Type-species: *Chetogaster violacea* Macquart, 1851, by monotypy.
- Codium* Enderlein, 1936 : 417. Type-species: *Rutilia oblonga* Macquart sensu Enderlein (misidentification) [= *Chetogaster violacea* Macquart], by original designation.
- Chaetogaster*. Incorrect subsequent spelling of *Chetogaster* Macquart.
- argentifera* Malloch, 1936 : 19. Holotype ♀, VICTORIA: Gisborne (SPHTM, Sydney) [examined]. – A.C.T., N.S.W., VICT.
- auriceps* Paramonov, 1968 : 371. Holotype ♀, QUEENSLAND: Collinsville (ANIC, Canberra). – QLD.
- canberra* Paramonov, 1954 : 277. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Black Mt (ANIC, Canberra) [examined]. – A.C.T., N.S.W., QLD, VICT.
- oblonga* Macquart, 1847 : 92 (76) (*Rutilia*). Holotype ♂, AUSTRALIA (BMNH, London, [examined]). – N.S.W., VICT.
- gratiosa* Paramonov, 1954 : 283. Holotype ♂, VICTORIA: Gibraltar Point, Wonnangatta River (ANIC, Canberra) [examined].
- pellucida* Paramonov, 1954 : 276 (as var. of *argentifera*). Holotype ♂, NEW SOUTH WALES: Toronto (ANIC, Canberra) [examined]. – N.S.W.
- violacea* Macquart, 1851 : 198 (225). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. – A.C.T., N.S.W., QLD, VICT.
- [*oblonga* Macquart sensu Enderlein (misidentification)]
- viridis* Malloch, 1936 : 19. Holotype ♂, NEW SOUTH WALES: Comboyne (SPHTM, Sydney) [examined]. – N.S.W., QLD.

Genus *CHRY SOPASTA* Brauer & Bergenstamm

- Chrysopasta* Brauer & Bergenstamm, 1889 : 152 (84). Type-species: *Chrysopasta versicolor* Brauer & Bergenstamm, 1889 [= *Rutilia elegans* Macquart, 1846], by original designation and monotypy.
- Roederia* Brauer & Bergenstamm, 1893 : 98 (10). Type-species: *Chrysopasta versicolor* Brauer & Bergenstamm, 1889 [= *Rutilia elegans* Macquart, 1846], by monotypy (see Crosskey, 1973 : 103). [Junior homonym of *Roederia* Mik, 1881.]
- Echrysopasta* Townsend, 1932 : 39. Type-species: *Rutilia elegans* Macquart, 1846, by original designation.
- Euchrysopasta*. Incorrect subsequent spelling of *Echrysopasta* Townsend (Paramonov, 1968).
- elegans* Macquart, 1846 : 309 (181) (*Rutilia*). Holotype ♂, [WESTERN AUSTRALIA] (BMNH, London) [examined]. – W.A.
- Type-locality originally cited as Sydney, New South Wales, in error (Crosskey, 1973 : 106).
- zabirna* Walker, 1849 : 863 (*Dexia*). Lectotype ♂ (by designation of Crosskey, 1973 : 118), WESTERN AUSTRALIA: Perth (BMNH, London) [examined].
- versicolor* Brauer & Bergenstamm, 1889 : 171 (103). Lectotype ♂ (by fixation of Malloch, 1928a : 616), WESTERN AUSTRALIA: Swan River (NM, Vienna).
- zabrina*. Incorrect subsequent spelling of *zabirna* Walker.

Genus *FORMOSIA* Guérin-Méneville

- Formosia* Guérin-Méneville, 1843 : 263. Type-species: *Rutilia mirabilis* Guérin-Méneville, 1831, by monotypy. (NEW GUINEA).

Subgenus *EUAMPHIBOLIA* Townsend

- Euamphibolia* Townsend, 1916b : 618 (as genus). Type-species: *Rutilia fulvipes* Guérin-Méneville, 1843 [= *Rutilia speciosa* Erichson, 1842], by original designation.

- Hega* Enderlein, 1936 : 419, 421. Type-species: *Hega viridicingens* Enderlein, 1936 [= *Rutilia complicata* Walker, 1861], by original designation. (MOLUCCAS).
- faceta* Enderlein, 1936 : 422 (*Hega*). Holotype ♂, QUEENSLAND: North Queensland (MNHU, Berlin) [examined]. – QLD.
- smaragdina* Malloch, 1929b : 312. Holotype ♀, QUEENSLAND: Gordonvale (AM, Sydney) [examined]. – QLD.
- speciosa* Erichson, 1842 : 273 (*Rutilia*). Lectotype ♀ (by designation of Crosskey, 1973 : 120), TASMANIA (MNHU, Berlin) [examined]. – A.C.T., N.S.W., QLD, TASM., VICT., W.A.
- fulvipes* Guérin-Ménéville, 1843 : 273 (*Rutilia*). Holotype ♀, AUSTRALIA (lost).

Genus *PRODIAPHANIA* Townsend

- Diaphania* Macquart, 1843 : 277 (120). Type-species: *Diaphania testacea* Macquart, 1843, by monotypy. [Junior homonym of *Diaphania* Hübner, 1818.]
- Prodiaphania* Townsend, 1927b : 159. [Replacement name for *Diaphania* Macquart.]
- [*Senostoma* Macquart sensu authors (misidentification)]
- arida* Paramonov, 1968 : 397. Holotype ♂, VICTORIA: Little Desert, 5 mls S. of Kiata (ANIC, Canberra). – VICT.
- biarmata* Malloch, 1936 : 14 (*Senostoma*). Holotype ♂, SOUTH AUSTRALIA (SPHTM, Sydney) [examined]. – S.A.
- brevitarsis* Paramonov, 1968 : 395. Holotype ♂, NEW SOUTH WALES: near Queanbeyan (ANIC, Canberra). – N.S.W.
- claripennis* Malloch, 1929b : 292 (as var. of *testacea*). Holotype ♂, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined]. – W.A.
- communi* Paramonov, 1968 : 389. Holotype ♂, VICTORIA: Little Desert, 5 mls S. of Kiata (ANIC, Canberra). – S.A., VICT.
- cygnus* Malloch, 1936 : 15 (*Senostoma*). Holotype ♂, WESTERN AUSTRALIA: Swan River (SPHTM, Sydney) [examined]. – W.A.
- deserta* Paramonov, 1968 : 398. Holotype ♂, NEW SOUTH WALES: Wanaaring (ANIC, Canberra). – N.S.W., QLD.
- echinomides* Bigot, 1874 : 466 (*Rutilia*). Holotype ♀, AUSTRALIA (BMNH, London) [examined]. – AUSTRALIA (state unknown).
- echinomyidea*. Incorrect subsequent spelling of *echinomides* Bigot (Brauer, 1899 : 512).
- fullerae* Paramonov, 1968 : 393. Holotype ♂, NEW SOUTH WALES: Barrington Tops (ANIC, Canberra). – N.S.W.
- funebri* Paramonov, 1968 : 391. Holotype ♂, SOUTH AUSTRALIA: 40 mls SW of Iron Knob (ANIC, Canberra). – S.A., W.A.
- furcata* Malloch, 1936 : 14 (*Senostoma*). Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra (ANIC, Canberra) [examined]. – A.C.T., N.S.W., S.A., VICT.
- genitalis* Paramonov, 1968 : 400. Holotype ♂, QUEENSLAND: Herberton (BMNH, London) [examined]. – A.C.T., N.S.W., QLD, VICT.
- paratestacea* Paramonov, 1968 : 397. Holotype ♂, NEW SOUTH WALES: Wee Jasper (ANIC, Canberra).
- georgei* Malloch, 1929b : 292. Holotype ♂, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined]. – N.S.W., S.A., W.A.
- minuta* Paramonov, 1968 : 399. Holotype ♂, QUEENSLAND: Gordonvale (ANIC, Canberra). – QLD.
- regina* Malloch, 1936 : 14 (*Senostoma*). Holotype ♂, QUEENSLAND: Eidsvold (SPHTM, Sydney) [examined]. – QLD.
- testacea* Macquart, 1843 : 278 (121) (*Diaphania*). Type(s), AUSTRALIA (MHN, Lille). – A.C.T., N.S.W., QLD, TASM.
- victoriae* Malloch, 1936 : 13 (*Senostoma*). Holotype ♂, VICTORIA: Gisborne (SPHTM, Sydney) [examined]. – N.S.W., QLD, VICT.

- vittata** Macquart, 1855 : 126 (106) (*Rutilia*). Holotype ♀, SOUTH AUSTRALIA: Adelaide (BMNH, London) [examined]. – S.A., TASM. (?). (Probably = *testacea* ♀).
walkeri Paramonov, 1968 : 400. Holotype ♀, WESTERN AUSTRALIA (AMNH, New York). – W.A.

Genus *RUTILIA* Robineau-Desvoidy

Rutilia Robineau-Desvoidy, 1830 : 319. Type-species: *Tachina vivipara* Fabricius, 1805, by subsequent designation of Crosskey (1967a : 26).

Subgenus *AMENIAMIMA* Crosskey

- Ameniamima* Crosskey, 1973 : 51. Type-species: *Rutilia argentifera* Bigot, 1874, by original designation.
argentifera Bigot, 1874 : 464. Lectotype ♂ (by designation of Crosskey, 1971 : 300), NEW SOUTH WALES: Sydney (BMNH, London) [examined]. – N.S.W., QLD.
frontosa Brauer & Bergenstamm, 1891 : 418 (114). *Nomen nudum*.
frontosa Malloch, 1929b : 310 (*Formosia*). Holotype ♂, NEW SOUTH WALES: Jindabyne (AM, Sydney) [examined].
cingulata Malloch, 1930a : 105 (*Formosia*). Holotype ♂, NEW SOUTH WALES: Wentworth Falls (ANIC, Canberra) [examined]. – N.S.W.
quadripunctata Malloch, 1930a : 104 (*Formosia*). Holotype ♂, QUEENSLAND: Eidsvold (ANIC, Canberra) [examined]. – QLD, VICT.

Subgenus *CHRYSORUTILIA* Townsend

- Chrysorutilia* Townsend, 1915b : 23 (as genus). Type-species: *Rutilia formosa* Robineau-Desvoidy, 1830, by original designation.
Habrota Enderlein, 1936 : 399. Type-species: *Rutilia formosa* Robineau-Desvoidy, 1830, by original designation. [Objective synonym of *Chrysorutilia*.]
Zoramseus Enderlein, 1936 : 416. Type-species: *Rutilia erichsonii* Engel, 1925 [= *Dexia chersipho* Walker, 1849], by original designation.
caeruleata Enderlein, 1936 : 402 (*Chrysorutilia*). Lectotype ♂ (by designation of Crosskey, 1973 : 117), WESTERN AUSTRALIA: Marloo Station (MNHU, Berlin) [examined]. – W.A.
lineata Enderlein, 1936 : 407 (*Chrysorutilia*). Lectotype ♂ (by designation of Crosskey, 1973 : 118), WESTERN AUSTRALIA: Wurarga, Marloo Station (MNHU, Berlin) [examined].
caesia Enderlein, 1936 : 402 (*Chrysorutilia*). Lectotype ♂ (by designation of Crosskey, 1973 : 117), AUSTRALIA (MNHU, Berlin) [examined]. – N.T., QLD, W.A.
viridescens Enderlein, 1936 : 403 (*Chrysorutilia*, as var. of *caesia*). Holotype ♀, QUEENSLAND (MNHU, Berlin) [examined].
rufibarbis Enderlein, 1936 : 405 (*Chrysorutilia*). Lectotype ♂ (by designation of Crosskey, 1973 : 118), WESTERN AUSTRALIA: Wurarga, Marloo Station (MNHU, Berlin) [examined].
chersipho Walker, 1849 : 864 (*Dexia*). Neotype ♂ (by designation of Crosskey, 1973 : 123), WESTERN AUSTRALIA: Waroona (BMNH, London) [examined]. – W.A.
erichsonii Brauer & Bergenstamm, 1891 : 418 (114). *Nomen nudum*.
erichsonii Engel, 1925 : 363. Lectotype ♀ (by fixation of Malloch, 1929b : 297), WESTERN AUSTRALIA: Swan River (NM, Vienna) [examined].
erichsoni. Incorrect subsequent spelling of *erichsonii* Brauer & Bergenstamm.
corona Curran, 1930 : 3. Holotype ♂, NEW SOUTH WALES (AMNH, New York) [examined]. – N.S.W.

- cryptica** Crosskey, 1973 : 65. Holotype ♂, SOUTH AUSTRALIA: near Moonta (BMNH, London) [examined]. – N.S.W., S.A., VICT.
- decora** Guérin-Méneville, 1843 : 266. Neotype ♂ (by designation of Crosskey, 1973 : 124), QUEENSLAND: Burpengary (BMNH, London) [examined]. – N.S.W., QLD, TASM.
- formosa** Robineau-Desvoidy, 1830 : 320. Neotype ♂ (by designation of Crosskey, 1973 : 124), NEW SOUTH WALES: near Lake George (ANIC, Canberra) [examined]. – A.C.T., N.S.W., VICT., W.A. (?).
- uzita** Walker, 1849 : 860 (*Dexia*). Holotype ♀, AUSTRALIA (BMNH, London) [examined].
- pubicollis** Thomson, 1869 : 530. Lectotype ♂ (by designation of Crosskey, 1973 : 120), NEW SOUTH WALES: Sydney (NR, Stockholm) [examined].
- subvittata** Malloch, 1929b : 295 (as var. of *formosa*). Holotype ♀, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined].
- There is some doubt about the placement of this name: the type was seen in 1965 but was not available during a recent revision of Rutiliini (Crosskey, 1973).
- goerlingiana** Enderlein, 1936 : 404 (*Chrysorutilia*). Lectotype ♀ (by designation of Crosskey, 1973 : 117), WESTERN AUSTRALIA: Wurarga, Marloo Station (MNHU, Berlin) [examined]. – W.A.
- idesa** Walker, 1849 : 858 (*Dexia*). Holotype ♂ [not ♀], AUSTRALIA (BMNH, London) [examined]. – AUSTRALIA (state unknown).
- imperialis** Guérin-Méneville, 1843 : 265. Neotype ♂ (by designation of Crosskey, 1973 : 125), NEW SOUTH WALES: Mount Wilson (ANIC, Canberra) [examined]. – N.S.W., QLD, VICT.
- ruficornis** Bigot, 1880 : 88. Holotype ♂, AUSTRALIA (BMNH, London) [examined].
- semifulva** Bigot, 1880 : 89. Lectotype ♂ (by designation of Crosskey, 1971 : 301), AUSTRALIA (BMNH, London) [examined].
- imperialoides** Crosskey, 1973 : 67. Holotype ♂, NEW SOUTH WALES: Wee Jasper (BMNH, London) [examined]. – A.C.T., N.S.W., QLD, VICT.
- panthea** Walker, 1849 : 862 (*Dexia*). Holotype ♀, WESTERN AUSTRALIA (BMNH, London) [examined]. – S.A., W.A.
- rubriceps** Macquart, 1847 : 92 (76). Holotype ♀, 'TASMANIA' (BMNH, London) [examined]. – QLD, TASM. (?); CEYLON, INDIA, VIETNAM, TIMOR (?).
- sevana** Walker, 1849 : 865 (*Dexia*). Neotype ♀ (by designation of Crosskey, 1973 : 123), INDIA: Maharashtra, Purandhar, near Poona (BMNH, London) [examined].
- nitens** Macquart, 1851 : 189 (216). Holotype ♀, INDIA (MNHN, Paris) [examined].
- formosina** Curran, 1930 : 2. Holotype ♂, AUSTRALIA (AMNH, New York) [examined].
- angustigena** Enderlein, 1936 : 403 (*Chrysorutilia*). Lectotype ♂ (by designation of Crosskey, 1973 : 117), QUEENSLAND: Herberton (MNHU, Berlin) [examined].
- splendida** Donovan, 1805 : plate fig. (unnumbered) & description (unpaginated) (*Musca*). Neotype ♂ (by designation of Crosskey, 1973 : 123), QUEENSLAND: Brisbane (BMNH, London) [examined]. – N.S.W., QLD, VICT.
- australasia** Gray in Cuvier, 1832 : 793 & Plate 114, fig. 1. Type(s), AUSTRALIA (lost).
- confluens** Enderlein, 1936 : 407 (*Chrysorutilia*, as var. of *splendida*). Lectotype ♂ (by designation of Crosskey, 1973 : 118), QUEENSLAND (MNHU, Berlin) [examined].
- evanescens** Enderlein, 1936 : 407 (*Chrysorutilia*, as var. of *splendida*). Holotype ♂, AUSTRALIA (MNHU, Berlin) [examined].
- transversa** Malloch, 1936 : 15. Holotype ♂, WESTERN AUSTRALIA: Swan River (SPHTM, Sydney) [examined]. – W.A.

Subgenus **DONOVANIUS** Enderlein

- Donovanius* Enderlein, 1936 : 409 (as genus). Type-species: *Musca regalis* Guérin-Méneville, 1843, by original designation.
- Psaronia* Enderlein, 1936 : 414. Type-species: *Psaronia bisetosa* Enderlein, 1936, by original designation.

- Menevillea* Enderlein, 1936 : 416. Type-species: *Rutilia pellucens* Macquart, 1846, by original designation.
- agalmiodes* Enderlein, 1936 : 412 (*Donovanius*). Holotype ♂, QUEENSLAND: Cairns (MNHU, Berlin) [examined]. – QLD.
- analoga* Macquart, 1851 : 191 (218). Holotype ♀ [not ♂], 'TASMANIA' (MNHN, Paris) [examined]. – A.C.T., N.S.W., QLD, TASM. (?), VICT.
- dubitata* Malloch, 1929b : 303. Holotype ♀, NEW SOUTH WALES: Jindabyne (AM, Sydney) [examined].
- bisetosa* Enderlein, 1936 : 414 (*Psaronia*). Lectotype ♀ (by designation of Crosskey, 1973 : 119), WESTERN AUSTRALIA: Wurarga, Marloo Station (MNHU, Berlin) [examined]. – W.A.
- nigribasis* Enderlein, 1936 : 411 (*Donovanius*, as var. of *fulgidus*). Lectotype ♂ (by designation of Crosskey, 1973 : 118), WESTERN AUSTRALIA: Wurarga, Marloo Station (MNHU, Berlin) [examined].
- ethoda* Walker, 1849 : 856 (*Dexia*). Holotype ♀, WESTERN AUSTRALIA: Swan River (BMNH, London) [examined]. – W.A.
- inusta* Wiedemann, 1830 : 306 (*Tachina*). Lectotype ♀ (by designation of Crosskey, 1973 : 121) NEW SOUTH WALES: Port Jackson (=Sydney) (MNHU, Berlin) [examined]. – A.C.T., N.S.W., QLD, S.A., TASM., VICT., W.A. (?).
- potina* Walker, 1849 : 857 (*Dexia*). Holotype ♀, TASMANIA (BMNH, London) [examined].
- spinipectus* Thomson, 1869 : 530. Lectotype ♂ (by designation of Crosskey, 1973 : 120), NEW SOUTH WALES: Sydney (NR, Stockholm) [examined].
- castanipes* Bigot, 1880 : 87. Lectotype ♀ (by designation of Crosskey, 1971 : 300), AUSTRALIA (BMNH, London) [examined].
- castanifrons* Bigot, 1880 : 88. Holotype ♀, AUSTRALIA (BMNH, London) [examined].
- lepada* Guérin-Méneville, 1843 : 268. Neotype ♂ (by designation of Crosskey, 1973 : 125), AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. – A.C.T., N.S.W., VICT.
- fulgida* Macquart, 1846 : 308 (180). Lectotype ♂ (by designation of Crosskey, 1971 : 286), NEW SOUTH WALES: Sydney (BMNH, London) [examined].
- onoba* Walker, 1849 : 859 (*Dexia*). Holotype ♂, AUSTRALIA (BMNH, London) [examined].
- pellucens* Macquart, 1846 : 305 (177). Neotype ♂ (by designation of Crosskey, 1973 : 126), NEW SOUTH WALES: Durras Bay (BMNH, London) [examined]. – A.C.T., N.S.W., VICT.
- imitator* Enderlein, 1936 : 412 (*Donovanius*). Holotype ♂, AUSTRALIA (MNHU, Berlin) [examined].
- regalis* Guérin-Méneville, 1831 : Plate 21, fig. 1, 1A–E; 1838 : 295. Neotype ♂ (by designation of Crosskey, 1973 : 126), AUSTRALIAN CAPITAL TERRITORY: Tharwa (ANIC, Canberra) [examined]. – A.C.T., N.S.W., S.A., VICT.
- nigra* Macquart, 1846 : 305 (177). *Nomen nudum*.
- retusa* Fabricius, 1775 : 775 (*Musca*). Holotype ♀, AUSTRALIA (BMNH, London: Banks Coll.) [examined]. – W.A. (Type-locality unknown, probably not W.A.).
- aditha* Walker, 1849 : 854 (*Dexia*). Lectotype ♂ (by present designation), WESTERN AUSTRALIA: Swan River (BMNH, London) [examined].
- viriditestacea* Macquart, 1851 : 190 (217). Lectotype ♂ (by designation of Crosskey, 1971 : 290), 'TASMANIA' (MNHN, Paris) [examined].
- sabrata* Walker, 1849 : 855 (*Dexia*). Holotype ♀, AUSTRALIA (BMNH, London) [examined]. – N.S.W., QLD.
- [*inornata* Guérin-Méneville sensu Malloch (misidentification)]
- spinolae* Rondani, 1864 : 23. Type(s), AUSTRALIA (not located, probably lost).
- viridinigra* Macquart, 1846 : 307 (179). Lectotype ♀ (by designation of Crosskey, 1971 : 290), 'TASMANIA' (MNHN, Paris) [examined]. – N.S.W., QLD, TASM. (?).
- fuscotestacea* Macquart, 1846 : 306 (178). Holotype ♀, NEW SOUTH WALES: Sydney (BMNH, London) [examined].
- barcha* Walker, 1849 : 857 (*Dexia*). Holotype ♀, AUSTRALIA (BMNH, London) [examined].

Subgenus **GRAPHOLOSTYLUM** Macquart

- Grapholostylum* Macquart, 1851 : 196 (223) (as genus). Type-species: *Grapholostylum dorso-maculatum* Macquart, 1851, by monotypy.
- Agalmia* Enderlein, 1936 : 433. Type-species: *Rutilia albopicta* Thomson, 1869 [= *Grapholostylum dorsomaculatum* Macquart, 1851], by original designation. [Junior homonym of *Agalmia* Enderlein, 1934 (Muscidae)].
- albovirida** Malloch, 1929b : 307. Holotype ♀, QUEENSLAND: Yeppoon (AM, Sydney) [examined]. — QLD.
- dorsomaculata** Macquart, 1851 : 196 (223) (*Grapholostylum*). Lectotype ♂ (by designation of Crosskey, 1971 : 271), 'TASMANIA' (BMNH, Paris) [examined]. — N.S.W., TASM. (?).
- leucosticta* Schiner, 1868 : 319. Holotype ♀, [AUSTRALIA: publ. as New Zealand in error] (NM, Vienna) [examined].
- albopicta* Thomson, 1869 : 529. Holotype ♀, NEW SOUTH WALES: Sydney (NR, Stockholm) [examined].
- variegata* Bigot, 1874 : 461 (*Formosia*). Lectotype ♀ (by designation of Crosskey, 1971 : 299), AUSTRALIA (BMNH, London) [examined].
- fuscisquama* Malloch, 1930a : 107 (as var. of *leucosticta*). Holotype ♀, NEW SOUTH WALES: Barrington Tops (ANIC, Canberra) [examined].
- micans** Malloch, 1929b : 299. Holotype ♀, NEW SOUTH WALES: Kosciusko (AM, Sydney) [examined]. — A.C.T., N.S.W.
- subtustomentosa** Macquart, 1851 : 191 (218). Holotype ♂, TASMANIA (MHNH, Paris) [examined]. — TASM.
- velutina* Bigot, 1874 : 463 (*Formosia*). Lectotype ♀ (by designation of Crosskey, 1971 : 299), TASMANIA (BMNH, London) [examined].

Subgenus **MICRORUTILIA** Townsend

- Microrutilia* Townsend, 1915b : 23 (as genus). Type-species: *Rutilia minor* Macquart, 1846, by original designation.
- Prosenostoma* Townsend, 1932 : 39. Type-species: *Senostoma flavipes* Brauer & Bergenstamm sensu Townsend (misidentification) [= *Rutilia (Senostoma) hirticeps* Malloch, 1929], by original designation.
- Eucompsa* Enderlein, 1936 : 400. Type-species: *Rutilia minor* Macquart, 1846, by original designation. [Junior homonym of *Eucompsa* Enderlein, 1922 (Tabanidae) and junior objective synonym of *Microrutilia* Townsend.]
- Pogonagalmia* Enderlein, 1936 : 435. Type-species: *Rutilia (Senostoma) hirticeps* Malloch, 1929, by original designation. [Junior objective synonym of *Prosenostoma* Townsend.] [*Senostoma* Macquart sensu authors (misidentification)]
- agalmiodes* Enderlein, 1936 : 434 (*Prosenostoma*, as aberration of *ruficornis*). Aberrational name without status in nomenclature.
- cupreiventris** Malloch, 1936 : 18 (as var. of *ruficornis*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (SPHTM, Sydney) [examined]. — N.S.W.
- fulviventris** Bigot, 1874 : 465. Lectotype ♀ (by designation of Crosskey, 1971 : 301), TASMANIA (BMNH, London) [examined]. — TASM.
- flavipes* Brauer & Bergenstamm, 1889 : 126 (58) (*Senostoma*). Lectotype ♀ (by designation of Crosskey, 1973 : 121), AUSTRALIA (NM, Vienna) [examined].
- hirticeps** Malloch, 1929b : 305. Holotype ♂, NEW SOUTH WALES: Monaro, Moonbar (AM, Sydney) [examined]. — N.S.W., VICT., W.A.
- pellens* Curran, 1930 : 2. Holotype ♂, NEW SOUTH WALES (AMNH, New York) [examined]. [*flavipes* Brauer & Bergenstamm sensu Townsend (misidentification)]
- liris** Walker, 1849 : 882 (*Musca*). Holotype ♀ [AUSTRALIA, prob. TASMANIA] (BMNH, London) [examined]. — TASM. (Probably = *minor* ♀).
- livis*. Incorrect subsequent spelling of *liris* Walker (Malloch, 1928b : 660).

- media** Macquart, 1846 : 310 (182). Lectotype ♂ (by designation of Crosskey, 1971 : 286), TASMANIA (MNHN, Paris) [examined]. – N.S.W., TASM., VICT.
ruficornis Macquart, 1851 : 193 (220) (*Diaphania*). Holotype ♂, TASMANIA (MNHN, Paris) [examined].
minor Macquart, 1846 : 310 (182). Lectotype ♂ (by designation of Crosskey, 1971 : 286), TASMANIA (MNHN, Paris) [examined]. – TASM., N.S.W.
nigriceps Malloch, 1929b : 306. Holotype ♂, NEW SOUTH WALES, East Dorrigo, Ulong (AM, Sydney) [examined]. – N.S.W.
nigripes Enderlein, 1936 : 435 (*Prosenostoma*). Lectotype ♂ (by designation of Crosskey, 1973 : 119), QUEENSLAND: Herberton (MNHU, Berlin) [examined]. – A.C.T., QLD.

Subgenus **NEORUTILIA** Malloch

- Neorutilia* Malloch, 1936 : 17. Type-species: *Rutilia (Neorutilia) simplex* Malloch, 1936, by original designation.
simplex Malloch, 1936 : 17. Holotype ♂, QUEENSLAND: Eidsvold (SPHTM, Sydney) [examined]. – N.S.W., QLD, VICT.

Subgenus **RUTILIA** Robineau-Desvoidy

- Rutilia* Robineau-Desvoidy, 1830 : 319 (as genus). Type-species: *Tachina vivipara* Fabricius 1805, by subsequent designation of Crosskey (1967a : 26).
Psaroniella Enderlein, 1936 : 417. Type-species: *Rutilia castanipes* Bigot sensu Enderlein (misidentification) [= *Rutilia setosa* Macquart, 1847], by original designation.
Stiraulax Enderlein, 1936 : 428. Type-species: *Tachina vivipara* Fabricius, 1805, by original designation. [Junior objective synonym of *Rutilia*.]
confusa Malloch, 1929b : 309 (*Formosia*). Holotype ♂, SOUTH AUSTRALIA: Kangaroo Island, deep creek 20 mls from Kingscote (AM, Sydney) [examined]. – A.C.T., N.S.W., S.A., VICT.
dentata Crosskey, 1973 : 81. Holotype ♂, VICTORIA: Monbulk (BMNH, London) [examined]. – VICT.
setosa Macquart, 1847 : 94 (78). Neotype ♂ (by designation of Crosskey, 1973 : 126), NEW SOUTH WALES: 4 mls N. of Bateman's Bay (ANIC, Canberra) [examined]. – N.S.W., VICT. [*castanipes* Bigot sensu Enderlein (misidentification)]
vivipara Fabricius, 1805 : 309 (*Tachina*). Neotype ♂ (by designation of Crosskey, 1973 : 126), NEW SOUTH WALES: Barrington Tops (ANIC, Canberra) [examined]. – A.C.T., N.S.W., QLD, TASM., VICT.
durvillei Robineau-Desvoidy, 1830 : 321. Neotype ♂ (by designation of Crosskey, 1973 : 124), NEW SOUTH WALES: Hawkesbury River (BMNH, London) [examined].
inornata Guérin-Méneville, 1843 : 268. Lectotype ♀ (by designation of Crosskey, 1973 : 119), AUSTRALIA (MNHN, Paris) [examined].
desvoidyi Guérin-Méneville, 1843 : 269. Lectotype ♀ (by designation of Crosskey, 1973 : 119), AUSTRALIA (MNHN, Paris) [examined].

Subgenerically unplaced species of *Rutilia* s.l.

- micropalpis** Malloch, 1929b : 298. Holotype ♀, NEW SOUTH WALES: Como (AM, Sydney). – N.S.W.
scutellata Enderlein, 1936 : 405 (*Chrysorutilia*, as var. of *media*). Holotype ♀, SOUTH AUSTRALIA: Adelaide (MNHU, Berlin). – S.A. (Status uncertain)

Unplaced names of Rutiliini

- accedens* Brauer & Bergenstamm, 1891 : 418 (114) (*Rutilia*). *Nomen nudum*.
accedens Brauer, 1899 : 512 (*Rutilia*). Unavailable.

erronea Paramonov, 1968 : 356, 361 (*Rutilia*). *Nomen nudum*.
grisea Brauer & Bergenstamm, 1891 : 417 (113) (*Diaphania*). *Nomen nudum*.
humeralis Paramonov, 1968 : 355 (*Rutilia*). *Nomen nudum*.
incomparabilis Brauer & Bergenstamm, 1891 : 418 (114) (*Rutilia*). *Nomen nudum*.
soror Brauer & Bergenstamm, 1891 : 418 (114) (*Rutilia*). *Nomen nudum*.
viridithorax Bigot, 1874 : 457 (*Formosia*). *Nomen nudum*.

Subfamily TACHININAE Robineau-Desvoidy

TACHINARIAE Robineau-Desvoidy, 1830 : 185. Type-genus: *Tachina* Meigen, 1803.

Tribe PALPOSTOMATINI Townsend

PALPOSTOMATINI Townsend, 1925 : 250. Type-genus: *Palpostoma* Robineau-Desvoidy, 1830.

Genus APALPOSTOMA Malloch

Apalpostoma Malloch, 1930a : 134. Type-species: *Apalpostoma cinerea* Malloch, 1930, by original designation.

cinereum Malloch, 1930a : 134 (as *cinerea*). Holotype ♀, WESTERN AUSTRALIA: Wyalkatchem (SPHTM, Sydney) [examined]. – W.A.

Genus EUSTACOMYIA Malloch

Eustacomyia Malloch, 1927 : 337. Type-species: *Eustacomyia breviseta* Malloch, 1927, by original designation.

breviseta Malloch, 1927 : 337. Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

hirta Malloch, 1930a : 133. Holotype ♂, NEW SOUTH WALES: Killara, Allowrie (SPHTM, Sydney) [examined]. – N.S.W.

Genus PALPOSTOMA Robineau-Desvoidy

Palpostoma Robineau-Desvoidy, 1830 : 429. Type-species: *Palpostoma testacea* Robineau-Desvoidy, 1830, by monotypy.

Opsophasiops Townsend, 1915b : 22. Type-species: *Myiophasia flava* Coquillett, 1900, by original designation.

Pseudopalpostoma Townsend, 1926c : 533. Type-species: *Palpostoma desvoidyi* Aldrich, 1922, by original designation.

aldrichi Hardy, 1938 : 57. Lectotype ♂ (by present designation), QUEENSLAND: Cairns (USNM, Washington) [examined]. – QLD.

[*testacea* Robineau-Desvoidy sensu Aldrich (misidentification)]

apicale Malloch, 1927 : 339 (as *apicalis*). Holotype ♀, NEW SOUTH WALES: Woy Woy (SPHTM, Sydney) [examined]. – N.S.W.

armiceps Malloch, 1931 : 296. Holotype ♀, QUEENSLAND: Townsville (USNM, Washington) [examined]. – QLD.

desvoidyi Aldrich, 1922 : 5. Holotype ♂, QUEENSLAND: Cairns (USNM, Washington) [examined]. – A.C.T., QLD.

flavum Coquillett, 1900 : 390 (*Myiophasia*). Lectotype ♂ (by fixation of Aldrich, 1922 : 5 as 'Type'), WESTERN AUSTRALIA (USNM, Washington) [examined]. – W.A.

Lectotype is labelled as from 'Tasmania' but species was described from 'West Australia'. The host beetle from which the type-material was reared is common in Western Australia but absent from Tasmania.

subsessile Malloch, 1931 : 297 (as *subsessilis*). Holotype ♀ [badly damaged], NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – A.C.T., N.S.W. (probably = *testaceum*)

testaceum Robineau-Desvoidy, 1830 : 429 (as *testacea*). Type(s), AUSTRALIA (lost). – AUSTRALIA (probably N.S.W.).

Tribe MYIOTRIXINI Townsend

MYIOTRIXINI Townsend, 1936 : 17, 90. Type-genus: *Myiotrixia* Brauer & Bergenstamm, 1893.

Genus MYIOTRIXA Brauer & Bergenstamm

Myiotrixia Brauer & Bergenstamm, 1893 : 96 (8). Type-species: *Myiotrixia prosopina* Brauer & Bergenstamm, 1893, by original designation and monotypy.

prosopina Brauer & Bergenstamm, 1893 : 96 (8). Holotype ♂, AUSTRALIA (NM, Vienna) [examined]. – AUSTRALIA (state uncertain).

The provenance is shown on the type label as 'Austra. sept.' (i.e. northern Australia) but was published in the original description as 'W. Australien'. No other specimens are known and the provenance remains uncertain.

Tribe ORMIINI Townsend

ORMIINAE Townsend, 1915a : 53. Type-genus: *Ormia* Robineau-Desvoidy, 1830.

Genus THEROBIA Brauer

Therobia Brauer, 1862 : 1231. Type-species: *Trypoderma abdominalis* Wiedemann, 1830, by monotypy. ('BENGAL').

Therobiopsis Townsend, 1919b : 166. Type-species: *Aulacephala braueri* Kertész, 1899, by original designation. (NEW GUINEA).

Ormiominda Paramonov, 1955 : 125. Type-species: *Ormiominda rieki* Paramonov, 1955, by original designation.

riekei Paramonov, 1955 : 126 (*Ormiominda*). Holotype ♀, QUEENSLAND: AYT (ANIC, Canberra) [examined]. – QLD.

secunda Paramonov, 1955 : 127 (*Ormiominda*). Holotype ♂, QUEENSLAND: 10 mls W. of Collinsville (ANIC, Canberra) [examined]. – QLD.

Tribe GLAUROCARINI Townsend

GLAUROCARINI Townsend, 1926c : 529. Type-genus: *Glaurocara* Thomson, 1869.

Genus DODDIANA Curran

Doddiana Curran, 1927b : 352. Type-species: *Doddiana pallens* Curran, 1927, by original designation.

Semisuturia Malloch, 1927 : 339. Type-species: *Semisuturia australis* Malloch, 1927, by original designation.

- australis** Malloch, 1927 : 340 (*Semisuturia*). Holotype ♀, QUEENSLAND: Eidsvold (SPHTM, Sydney) [examined]. – N.S.W., QLD.
- maculiventris** Malloch, 1933b : 136 (as var. of *australis*). Holotype ♀, NEW SOUTH WALES: National Park (SPHTM, Sydney) [examined].
- flavifrons** Malloch, 1930b : 342. Holotype ♀, QUEENSLAND: Eidsvold (SPHTM, Sydney) [examined]. – QLD.
- inermis** Malloch, 1933b : 138. Holotype ♂, QUEENSLAND: Innisfail (SPHTM, Sydney) [examined]. – QLD.
- pallens** Curran, 1927b : 353. Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. – QLD.
- parviseta** Malloch, 1930b : 341. Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

Tribe **CAMPYLOCHETINI** Townsend

CAMPYLOCHETINI Townsend, 1936 : 21, 23, 229. Type-genus: *Campylocheta* Rondani, 1859.

Genus **ELPE** Robineau-Desvoidy

Elpe Robineau-Desvoidy, 1863 : 488. Type-species: *Tachina inepta* Meigen, 1824, by original designation. (GERMANY).

Undetermined spp. – N.S.W., S.A., TASM.

Tribe **VORIINI** Townsend

VORIINI Townsend, 1912 : 50. Type-genus: *Voria* Robineau-Desvoidy, 1830.

Genus **HYSTRICOVORIA** Townsend

Hystricovoria Townsend, 1928 : 395. Type-species: *Hystricovoria bakeri* Townsend, 1928, by original designation. (PHILIPPINES).

Undetermined sp. – W.A.

Genus **HYLEORUS** Aldrich

Hyleorus Aldrich, 1926 : 16. Type-species: *Hyleorus furcatus* Aldrich, 1926, by monotypy.

furcatus Aldrich, 1926 : 16. Holotype ♀, QUEENSLAND: Cairns (USNM, Washington) [examined]. – QLD; NEW GUINEA.

Genus **VORIA** Robineau-Desvoidy

Voria Robineau-Desvoidy, 1830 : 195. Type-species: *Voria latifrons* Robineau-Desvoidy, 1830 [= *Tachina ruralis* Fallén, 1810], by monotypy. (EUROPE).

ruralis Fallén, 1810 : 265 (*Tachina*). Lectotype ♂ (by present designation), SWEDEN: Skåne, Esperöd (NR, Stockholm) [examined]. – N.S.W.; NEW GUINEA; widespread EURASIA, NORTH AMERICA, MEXICO, SOUTH AMERICA.

Identification of Australian specimens as *ruralis* correct on present evidence but confirmation needed.

Tribe **THELAIRINI** Lioy

THELAREINI Lioy, 1864 : 65. Type-genus: *Thelaira* Robineau-Desvoidy, 1830.

Genus **HALYDAIA** Egger

Halydaia Egger, 1856 : 383. Type-species: *Halydaia aurea* Egger, 1856, by subsequent designation of Brauer (1893 : 498). (AUSTRIA).

Anaperistommyia Townsend, 1926a : 15. Type-species: *Anaperistommyia optica* Townsend, 1926, by original designation. (SUMATRA).

Macropia Malloch, 1930b : 322. Type-species: *Macropia rufiventris* Malloch, 1930, by original designation.

Halidaya. Incorrect subsequent spelling of *Halydaia* Egger, 1856. [Not *Halidaya* Rondani, 1856 (Sepsidae)]

mackerrasi Paramonov, 1960 : 699 (*Halidaya*). Holotype ♂, QUEENSLAND: Palm Is. (ANIC, Canberra) [examined]. – QLD.

norrisi Paramonov, 1960 : 698 (*Halidaya*). Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra (ANIC, Canberra) [examined]. – A.C.T., QLD.

rufiventris Malloch, 1930b : 322 (*Macropia*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

Genus **THELAIRA** Robineau-Desvoidy

Thelaira Robineau-Desvoidy, 1830 : 214. Type-species: *Thelaira abdominalis* Robineau-Desvoidy, 1830 [= *Musca nigripes* Fabricius, 1794], by subsequent designation of Townsend (1916a : 9). (EUROPE).

Thelairia. Incorrect subsequent spelling of *Thelaira* Robineau-Desvoidy (Malloch, 1930a : 109–110).

Therairia. Incorrect subsequent spelling of *Thelaira* R.-D. (Hardy, 1934 : 32–33).

australis Walker, 1852 : 314 (*Dexia*). Holotype ♂, AUSTRALIA (BMNH, London) [examined]. – AUSTRALIA (state unknown).

Undetermined sp. – N.S.W.

[*leucozona* Panzer sensu Malloch (misidentification)].

Tribe **MINTHOINI** Brauer & Bergenstamm

MINTHOIDAE Brauer & Bergenstamm, 1889 : 78. Type-genus: *Mintho* Robineau-Desvoidy, 1830.

Genus **MINTHoxIA** Mesnil

Minthoxia Mesnil, 1968 : 184. Type-species: *Minthoxia dasyops* Mesnil, 1968, by original designation.

dasyops Mesnil, 1968 : 186. Holotype ♂, NEW SOUTH WALES: Lisarow (BMNH, London) [examined]. – N.S.W.

Genus **SUMPIGASTER** Macquart

Sumpigaster Macquart, 1855 : 124 (104). Type-species: *Sumpigaster fasciatus* Macquart, 1855, by monotypy.

Atractodexia Bigot, 1885b : xxxii. Type-species: *Atractodexia argentifera* Bigot, 1885 [= *Sumpigaster fasciatus* Macquart, 1855], by monotypy. (NEW CALEDONIA).

Mesembriomintho Townsend, 1916c : 158. Type-species: *Mesembriomintho compressa* Townsend, 1916 [= *Sumpigaster fasciatus* Macquart, 1855], by original designation.

fasciatus Macquart, 1855 : 125 (105). Holotype ♂, QUEENSLAND: Moreton Bay (BMNH, London) [examined]. – N.S.W., QLD; NEW CALEDONIA, LOYALTY IS.

argenteifera Bigot, 1885b : xxxii (*Atractodexia*). Holotype ♂, NEW CALEDONIA (BMNH, London) [examined].

compressa Townsend, 1916c : 159 (*Mesembriomintho*). Holotype ♂, QUEENSLAND: Hamilton, Upper North Pine (USNM, Washington) [examined].

Tribe NEMORAEINI Robineau-Desvoidy

NEMOREIDAE Robineau-Desvoidy, 1863 (1) : 171. Type-genus : *Nemoraea* Robineau-Desvoidy, 1830.

Genus NEMORAEA Robineau-Desvoidy

Nemoraea Robineau-Desvoidy, 1830 : 71. Type-species : *Nemoraea bombylans* Robineau-Desvoidy, 1830 [= *Tachina pellucida* Meigen, 1824], by subsequent designation of Townsend (1916a : 8). (EUROPE).

Undescribed sp. – N.S.W., QLD.

Tribe LESKIINI Townsend

LESKIINI Townsend, 1919c : 20. Type-genus: *Leskia* Robineau-Desvoidy, 1830.

Genus APATEMYIA Macquart

Apatemyia Macquart, 1846 : 325 (197). Type-species: *Apatemyia longipes* Macquart, 1846, by monotypy.

flavipes Macquart, 1851 : 160 (187) (*Exorista*). Holotype ♀, [TASMANIA, publ. as 'Oceania'] (MNHN, Paris) [examined]. **Comb. n.** – TASM.

longipes Macquart, 1846 : 325 (197). Lectotype ♂ (by designation of Crosskey, 1971 : 263), TASMANIA (MNHN, Paris) [examined]. – TASM.

rufiventris Macquart, 1847 : 98 (82) (*Calliphora*). Holotype ♀, TASMANIA (BMNH, London) [examined]. **Comb. n.** – TASM. (Possibly = *longipes* ♀).

Genus DEMOTICOIDES Mesnil

Demoticoides Mesnil, 1953 : 150. Type-species: *Demoticoides pallidus* Mesnil, 1953, by monotypy. (INDIA).

pallidus Mesnil, 1953 : 150. Holotype ♂, INDIA: Madras, Nilambur (BMNH, London) [examined]. – QLD; INDIA.

Genus EXECHOPALPUS Macquart

Exechopalpus Macquart, 1847 : 91 (75). Type-species: *Exechopalpus rufipalpus* Macquart, 1847, by monotypy.

dubitalis Malloch, 1930a : 132. Holotype ♂, WESTERN AUSTRALIA: Tammin (SPHTM, Sydney) [examined]. – W.A.

- fulvipes* Malloch, 1930a : 132. Holotype ♀, WESTERN AUSTRALIA: Eradu (SPHTM, Sydney) [examined]. – W.A.
- nigripes* Malloch, 1930a : 132. Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- atripes* Malloch, 1930a : 131. [Lapsus for *nigripes* in key to species.]
- rufifemur* Malloch, 1930a : 131. Holotype ♂, WESTERN AUSTRALIA: Eradu (SPHTM, Sydney) [examined]. – W.A.
- rufofemorata* Malloch, 1930a : 128. [Lapsus for *rufifemur* in legend, fig. 28.]
- rufipalpus* Macquart, 1847 : 92 (76). Holotype ♂, AUSTRALIA (BMNH, London) [examined]. – AUSTRALIA (state unknown).
- rufipalpis*. Incorrect subsequent spelling of *rufipalpus* Macquart (Malloch, 1930a : 130, 132).

Genus *RHINOMYOBIA* Brauer & Bergenstamm

- Rhinomyobia* Brauer & Bergenstamm, 1893 : 140 (52). Type-species: *Rhinomyobia australis* Brauer & Bergenstamm, 1893, by original designation and monotypy.
- Rhinomyobia*. Incorrect subsequent spelling of *Rhinomyobia* Brauer & Bergenstamm.
- australis* Brauer & Bergenstamm, 1893 : 140 (52). Holotype ♀, AUSTRALIA (not located). – A.C.T., N.S.W.
- The holotype should be in NM, Vienna, but has not been found in that collection (although at some time seen there by Townsend).

Genus *SIPHOLESKIA* Townsend

- Sipholeskia* Townsend, 1916b : 628. Type-species: *Drepanoglossa occidentalis* Coquillett, 1895, by original designation. (NORTH AMERICA).
- certima* Curran, 1927b : 351 (*Demoticus*). Holotype ♀, QUEENSLAND: Kuranda (DEI, Eberswalde) [examined]. **Comb. n.** – QLD.

Genus *TOXOCNEMIS* Macquart

- Toxocnemis* Macquart, 1855 : 123 (103). Type-species: *Toxocnemis vittata* Macquart, 1855, by monotypy.
- Toxonemis*. Incorrect subsequent spelling of *Toxocnemis* Macquart (Hardy, 1934 : 33).
- vittata* Macquart, 1855 : 124 (104). Holotype ♂, SOUTH AUSTRALIA: Adelaide (BMNH, London) [examined]. – N.S.W., S.A.

Unplaced species of Leskiini

- transversalis* Malloch, 1930a : 130 (*Rhinomyobia*). Holotype ♀, QUEENSLAND: Cairns district (SPHTM, Sydney) [examined]. – QLD.
- This species, and allied forms in Fiji and New Guinea, appear to represent an undescribed genus.

Tribe *ERNESTIINI* Townsend

- ERNESTIINI* Townsend, 1912 : 50. Type-genus: *Ernestia* Robineau-Desvoidy, 1830.

Genus **AMPHITROPESA** Townsend

Amphitropesa Townsend, 1933 : 463. Type-species: *Amphitropesa elegans* Townsend, 1933, by original designation.

elegans Townsend, 1933 : 464. Holotype ♀, NEW SOUTH WALES (BMNH, London) [examined]. – N.S.W.

Genus **CHLOROTACHINA** Townsend

Chlorotachina Townsend, 1915b : 21. Type-species: *Chrysosoma flaviceps* Macquart, 1851, by original designation.

Chlorodexia Townsend, 1916c : 154. Type-species: *Chlorodexia froggattii* Townsend, 1916, by original designation.

flaviceps Macquart, 1851 : 158 (185) (*Chrysosoma*). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. – N.S.W., QLD, VICT., W.A.

froggattii Townsend, 1916c : 154 (*Chlorodexia*). Holotype ♂, NEW SOUTH WALES: Merriwa (USNM, Washington) [examined]. – N.S.W., QLD.

froggatti. Incorrect subsequent spelling of *froggattii* Townsend (Malloch, 1929b : 324, 326).

nigrocaerulea Malloch, 1929b : 324. Holotype ♂, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined]. – W.A., TASM. (?)

Undescribed sp. – S.A., TASM.

Genus **MACROCHLORIA** Malloch

Macrochloria Malloch, 1929b : 326. Type-species: *Macrochloria calliphorosoma* Malloch, 1929 [= *Nemoraea nitidiventris* Macquart, 1851], by original designation.

nitidiventris Macquart, 1851 : 155 (182) (*Nemoraea*). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. **Comb. n.** – N.S.W., TASM.

calliphorosoma Malloch, 1929b : 326. Holotype ♂, NEW SOUTH WALES: Barrington Tops (AM, Sydney) [examined]. **Syn. n.**

rufipes Malloch, 1936 : 20 (as var. of *calliphorosoma*). Holotype ♂, NEW SOUTH WALES: Toronto (SPHTM, Sydney) [examined]. **Syn. n.**

Genus **NEXIMYIA** Crosskey

Neophasia Brauer & Bergenstamm, 1893 : 100 (12). Type-species: *Neophasia picta* Brauer & Bergenstamm, 1893, by original designation and monotypy. [Junior homonym of *Neophasia* Behr, 1869.]

Euphasia Townsend, 1908 : 76. [Replacement name proposed for *Neophasia* Brauer & Bergenstamm, but itself a junior homonym of *Euphasia* Stephens, 1830, and *Euphasia* Mulsant & Verreaux, 1876.]

Neximyia Crosskey, 1967a : 20. [Replacement name for *Euphasia* Townsend.]

picta Brauer & Bergenstamm, 1893 : 210 (122) (*Neophasia*). Holotype ♀, WESTERN AUSTRALIA (NM, Vienna) [examined]. – N.S.W., W.A.

Tribe **PARERIGONINI** Mesnil

PARERIGONINA Mesnil, 1966 : 888. Type-genus: *Parerigone* Brauer, 1898.

Genus **AUSTRALOTACHINA** Curran

Australotachina Curran, 1938 : 194. Type-species: *Australotachina calliphoroides* Curran, 1938, by original designation.

calliphoroides Curran, 1938 : 195. Holotype ♂, QUEENSLAND: Kuranda (DEI, Eberswalde) [examined]. — QLD.

Genus **LEVERELLA** Baranov

Leverella Baranov, 1934a : 473. Type-species: *Leverella institutiimperialis* Baranov, 1934, by original designation. (SOLOMON ISLANDS).

Undetermined sp. — QLD.

Genus **PYGIDIMYIA** Crosskey

Pygidia Malloch, 1930b : 330. Type-species: *Pygidia rufolateralis* Malloch, 1930, by original designation. [Junior homonym of *Pygidia* Mulsant & Rey, 1861.]

Pygidimya Crosskey, 1967a : 25. [Replacement name for *Pygidia* Malloch.]

rufolateralis Malloch, 1930b : 331 (*Pygidia*). Holotype ♂, NEW SOUTH WALES: Kosciusko (ANIC, Canberra) [examined]. — N.S.W.

Genus **ZITA** Curran

Zita Curran, 1927b : 351. Type-species: *Zita aureopyga* Curran, 1927, by original designation.

aureopyga Curran, 1927b : 351. Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. — QLD.

Undetermined sp. — N.S.W.

Tribe **LINNAEMYINI** Townsend

LINNAEMYINI Townsend, 1919a : 591. Type-genus: *Linnaemya* Robineau-Desvoidy, 1830.

Genus **APALPUS** Malloch

Apalpus Malloch, 1929b : 318. Type-species: *Apalpus dorsalis* Malloch, 1929, by original designation.

dorsalis Malloch, 1929b : 318. Holotype ♀, WESTERN AUSTRALIA: Eradu, near Geraldton (ANIC, Canberra) [examined]. — S.A., W.A.

Genus **CHAETOPHTHALMUS** Brauer & Bergenstamm

Chaetophthalmus Brauer & Bergenstamm, 1891 : 383 (79). Type-species: *Micropalpus brevigaster* Macquart, 1846, by subsequent designation of Townsend (1916a : 6). [Type-species not fixed by Brauer & Bergenstamm, 1893; see Crosskey, 1967a : 9.]

Ballardia Curran, 1927a : 166. Type-species: *Ballardia pallipes* Curran, 1927, by original designation.

[*Amphibolosia* Surcouf sensu authors (misidentification)]

[*Aprotheca* Macquart sensu Hardy, 1959 : 215 (misidentification)]

- bicolor** Macquart, 1848 : 204 (44) (*Micropalpus*). Holotype ♀, AUSTRALIA (lost). – N.S.W., QLD.
- biseriatus** Malloch, 1930b : 311. Holotype ♂, NEW SOUTH WALES: Narromine (USNM, Washington) [examined]. – N.S.W., QLD, S.A.
- brevigaster** Macquart, 1846 : 277 (149) (*Micropalpus*). Holotype ♂, TASMANIA (BMNH, London) [examined]. – TASM., N.S.W. & QLD (?).
- pallipes** Curran, 1927a : 166 (*Ballardia*). Holotype ♂ [head lost], QUEENSLAND: Brisbane (BMNH, London) [examined]. – QLD. (Possibly = *bicolor*).
- ruficeps** Macquart, 1847 : 89 (73) (*Myobia*). Holotype ♂, TASMANIA (BMNH, London) [examined]. **Comb. n.** – TASM.
- similis** Walker, 1852 : 266 (*Tachina*). Holotype ♂, NEW SOUTH WALES (BMNH, London) [examined]. – N.S.W., VICT.

Genus *LINNAEMYA* Robineau-Desvoidy

- Linnaemya* Robineau-Desvoidy, 1830 : 52. Type-species: *Linnaemya silvestris* Robineau-Desvoidy, 1830 [= *Tachina vulpina* Fallén, 1810], by subsequent designation of Robineau-Desvoidy (1863 : 131, as *vulpina* with *silvestris* cited in synonymy). (EUROPE).
- Linnaemyia*. Incorrect subsequent spelling of *Linnaemya* Robineau-Desvoidy.
- concavicornis** Macquart, 1851 : 146 (173) (*Micropalpus*). Holotype ♂ [not ♀], AUSTRALIA [prob. NEW SOUTH WALES, publ. 'côte orientale'] (MNHN, Paris) [examined]. **Comb. n.** – QLD, N.S.W. (?).
- nigripalpus* Tryon, 1900 : 144 (*Linnaemyia*). Type(s), QUEENSLAND (Not located, possibly lost). **Syn. n.**

Tribe TACHININI Robineau-Desvoidy

TACHINARIAE Robineau-Desvoidy, 1830 : 185. Type-genus: *Tachina* Meigen, 1803.

Genus *CUPHOCERA* Macquart

- Cuphocera* Macquart, 1845 : 267. Type-species: *Micropalpus ruficornis* Macquart, 1835, by original designation. (EUROPE).
- Acuphocera* Townsend, 1926a : 37. Type-species: *Acuphocera sumatrensis* Townsend, 1926 [= *Musca varia* Fabricius, 1794], by original designation. (SUMATRA).
- emmesia** Malloch, 1930b : 318. Holotype ♂, WESTERN AUSTRALIA: Geraldton (SPHTM, Sydney) [examined]. – W.A.
- pilifacies** Macquart, 1851 : 146 (173) (*Micropalpus*). Holotype ♂ [not ♀], AUSTRALIA [prob. NEW SOUTH WALES, publ. 'côte orientale'] (MNHN, Paris) [examined]. **Comb. n.** – N.S.W. (?).
- pilosa** Malloch, 1930b : 316. Holotype ♂, NEW SOUTH WALES: Woy Woy (not located, probably lost; paratype ♂ in USNM, Washington). – N.S.W.
- setigera** Malloch, 1930b : 318. Holotype ♂, NEW SOUTH WALES: Kosciusko (SPHTM, Sydney) [examined]. – A.C.T., N.S.W.
- vittata** Macquart, 1846 : 278 (150) (*Micropalpus*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. – TASM.
- varia** Fabricius, 1794 : 327 (*Musca*). Holotype ♀, EAST INDIES (publ. 'Ind. or.') (UZM, Copenhagen) [examined]. – QLD; NEW GUINEA; widespread ORIENTAL REGION.
- sumatrensis* Townsend, 1926a : 37. Lectotype ♂ (by designation of Crosskey, 1969 : 90), SUMATRA: Fort de Kock (ZM, Amsterdam) [examined].
- (For other synonyms, based on Oriental types, see Crosskey, 1966a : 674)

Genus *ERISTALIOMYIA* Townsend

Eristaliomyia Townsend, 1926a : 37. Type-species: *Eristaliomyia nitidifrons* Townsend, 1926 [= *Echinomyia brevipennis* Walker, 1857], by original designation. (SUMATRA).

[? *Peleteria* Robineau-Desvoidy sensu Hardy, 1938 : 66 (misidentification)]

Undescribed sp. — QLD.

Genus *MICROTROPESA* Macquart

Microtropesa Macquart, 1846 : 313 (185). Type-species: *Musca sinuata* Donovan, 1805, by monotypy.

Gerotachina Townsend, 1916c : 152. Type-species: *Tachina obtusa* Walker, 1852, by original designation.

Microtropeza. Incorrect subsequent spelling of *Microtropesa* Macquart.

[*Tasmaniomyia* Townsend sensu Hardy, 1939 : 33 (misidentification)]

campbelli Paramonov, 1951 : 768. Holotype ♀, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. — A.C.T.

canberra Paramonov, 1951 : 771. Holotype ♀, AUSTRALIAN CAPITAL TERRITORY: Canberra, Black Mt. (ANIC, Canberra) [examined]. — A.C.T.

flavitaris Malloch, 1929b : 288. Holotype ♂, TASMANIA (AM, Sydney) [examined]. — W.A., S.A. (?).

flaviventris Malloch, 1930a : 101. Holotype ♀, NEW SOUTH WALES: Narromine (ANIC, Canberra) [examined]. — A.C.T., N.S.W., QLD.

intermedia Malloch, 1930a : 100. Holotype ♂, QUEENSLAND: Eidsvold (ANIC, Canberra) [examined]. — A.C.T., N.S.W., QLD.

latigena Paramonov, 1951 : 769. Holotype ♀, WESTERN AUSTRALIA: Kalgoorlie (WADA, Perth). — S.A., W.A.

nigricornis Macquart, 1851 : 199 (226). Lectotype ♂ (by designation of Crosskey, 1971 : 278), TASMANIA (MNHN, Paris) [examined]. — TASM.

obtusa Walker, 1852 : 274 (*Tachina*). Lectotype ♀ (by fixation of Townsend, 1932 : 40, as 'Ht'), NEW SOUTH WALES (BMNH, London) [examined]. — N.S.W.

stolid Walker, 1858 : 195 (*Echinomyia*). Holotype ♂, NEW SOUTH WALES (BMNH, London) [examined].

ochriventris Malloch, 1929b : 287. Holotype ♀, NEW SOUTH WALES: Barrington Tops (ANIC, Canberra) [examined]. — N.S.W., TASM., VICT.

sinuata Donovan, 1805 : plate fig. (unnumbered) & description (unpaginated) (*Musca*). Type(s) [♂], AUSTRALIA (lost). — A.C.T., N.S.W., QLD, TASM., VICT., W.A.

Publication date of this name has usually been cited as 1798 in error. Type-material of *sinuata* has never been located and is presumed lost (Townsend's, 1932 : 40, statement of ♀ holotype in London is in error). The identity is certain from Donovan's coloured figure, painted it appears from a ♂ specimen.

bura Walker, 1849 : 760 (*Tachina*). Lectotype ♂ (by present designation), TASMANIA (BMNH, London) [examined].

ignipennis Brauer, 1899 : 510. [Unavailable name first published as a synonym of *sinuata* and no later validation; see Crosskey, 1971 : 278.]

latimana Malloch, 1929b : 287. Holotype ♀, QUEENSLAND (AM, Sydney) [examined].

skusei Bergroth, 1894 : 73. Type(s) ♀, QUEENSLAND: Duaringa, Coomooboolaroo (not located). QLD.

The type-material of this species has not been found in the Zoological Museum, Helsinki (the most likely depository) and is possibly lost.

violacescens Enderlein, 1937 : 441 (*Microtropeza*, sic, lapsus). Lectotype ♂ (by present designation), QUEENSLAND: Herberton (DEI, Eberswalde). — N.S.W., N.T., QLD, W.A., TASM. (?).

- fallax* Hardy, 1939 : 35. Holotype ♀, QUEENSLAND: Brisbane (not located). **Syn. n.**
 [*sinuata* Donovan sensu Malloch (misidentification)]
viridescens Paramonov, 1951 : 765. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra
 (ANIC, Canberra) [examined]. – A.C.T., W.A.

Subfamily GONIINAE Robineau-Desvoidy

GONIDAE Robineau-Desvoidy, 1830 : 74. Type-genus: *Gonia* Meigen, 1803.

Tribe ACEMYINI Brauer & Bergenstamm

ACEMYIDAE Brauer & Bergenstamm, 1889 : 80. Type-genus: *Acemya* Robineau-Desvoidy, 1830.

Genus CERACIA Rondani

- Ceracia* Rondani, 1865 : 221. Type-species: *Ceracia mucronifera* Rondani, 1865, by monotypy. (ITALY).
Myothyria Wulp, 1890 : 208. Type-species: *Myothyria majorina* Wulp, 1890, by subsequent designation of Coquillett (1910 : 573). (MEXICO).
armata Malloch, 1930b : 340 (*Myothyria*). Holotype ♀, NEW SOUTH WALES: Kosciusko (SPHTM, Sydney) [examined]. **Comb. n.** – A.C.T., N.S.W., TASM. (Probably = *fergusoni*).
fergusoni Malloch, 1930b : 339 (*Myothyria*). Holotype ♂, WESTERN AUSTRALIA: Eradu (SPHTM, Sydney) [examined]. **Comb. n.** – A.C.T., N.S.W., N.T., QLD, S.A., VICT., W.A.

Tribe NEAERINI Mesnil

NAEREINA [sic] Mesnil, 1956 : 557. Type-genus: *Neaera* Robineau-Desvoidy, 1830.

Genus VORIELLA Malloch

- Voriella* Malloch, 1930b : 335. Type-species: *Voriella uniseta* Malloch, 1930, by original designation (as *V. recedens* by lapsus: Malloch, 1931 : 298).
uniseta Malloch, 1930b : 335. Holotype ♂, NEW SOUTH WALES: Sydney (ANIC, Canberra) [examined]. – A.C.T., N.S.W., VICT.
recedens Malloch, 1930b : 335. [Lapsus for *uniseta* in citation of *Voriella* type-species; see Malloch, 1931 : 298.]

? new genera

Undescribed spp. – N.S.W., QLD, S.A.

Tribe SIPHONINI Rondani

SIPHONAE Rondani, 1845 : 31. Type-genus: *Siphona* Meigen, 1803.

Genus ACTIA Robineau-Desvoidy

- Actia* Robineau-Desvoidy, 1830 : 85. Type-species: *Actia pilipennis* Robineau-Desvoidy, 1830 (junior secondary homonym of *pilipennis* Fallén, 1810) [= *Roeselia lamia* Meigen, 1838]. Suspension of ICZN Rules required (see Sabrosky & Arnaud, 1965 : 1061). (EUROPE).

- brevis** Malloch, 1930b : 309. Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- darwini** Malloch, 1929b : 334. Holotype ♂, NORTHERN TERRITORY: Darwin (SPHTM, Sydney) [examined]. – N.T., QLD.
- eucosmae** Bezzi, 1926 : 239. Holotype ♀, QUEENSLAND: Milton Farm (publ. as 'Brisbane') (BMNH, London) [examined]. – N.S.W., QLD, S.A.
- lata** Malloch, 1930b : 307. Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- quadriseta** Malloch, 1936 : 20. Holotype ♀, NEW SOUTH WALES: Nyngan (SPHTM, Sydney) [examined]. – N.S.W.

Genus **CEROMYA** Robineau-Desvoidy

- Ceromya* Robineau-Desvoidy, 1830 : 86. Type-species: *Ceromya testacea* Robineau-Desvoidy, 1830 [= *Tachina bicolor* Meigen, 1824], by subsequent designation of Coquillett (1910 : 520). (EUROPE).
- Schizoceromyia* Townsend, 1926c : 542. Type-species: *Schizotachina fergusoni* Bezzi, 1923, by original designation. **Syn. n.**
- Schizactiana* Curran, 1927b : 356 (as subg. of *Actia*). Type-species: *Actia (Schizactiana) valida* Curran, 1927, by original designation. **Syn. n.**
- Ceromyia*. Incorrect subsequent spelling of *Ceromya* Robineau-Desvoidy.
- Schizactiana*. Incorrect subsequent spelling of *Schizactiana* Curran (Hardy, 1959 : 213).
- fergusoni** Bezzi, 1923 : 657 (*Schizotachina*). Holotype ♂, NEW SOUTH WALES: Sydney (not located). **Comb. n.** – N.S.W.
- The holotype was stated by Bezzi to be in the Microbiological Laboratory, Sydney, but has not been located.
- fergussoni*. Incorrect subsequent spelling of *fergusoni* Bezzi (Curran, 1927b : 355–356).
- invalida** Malloch, 1930b : 305 (*Actia*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- norma** Malloch, 1929a : 116 (*Actia*). Holotype ♂, NEW SOUTH WALES: Como (USNM, Washington) [examined]. – N.S.W., VICT., W.A.
- parviseta** Malloch, 1930b : 308 (*Actia*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.
- valida** Curran, 1927b : 356 (*Actia*). Holotype ♂, QUEENSLAND: Palmerston (DEI, Eberswalde) [examined]. **Comb. n.** – QLD.

Genus **PERIBAEA** Robineau-Desvoidy

- Herbstia* Robineau-Desvoidy, 1851 : 184. Type-species: *Herbstia tibialis* Robineau-Desvoidy, 1851, by monotypy. [Junior homonym of *Herbstia* Edwards, 1834.] (FRANCE).
- Peribaea* Robineau-Desvoidy, 1863 : 720. Type-species: *Peribaea apicalis* Robineau-Desvoidy, 1863 [= *Herbstia tibialis* Robineau-Desvoidy, 1851], by subsequent designation of Coquillett (1910 : 587). (FRANCE).
- Strobliomyia* Townsend, 1926b : 31. Type-species: *Thryptocera fissicornis* Strobl, 1910, by original designation. (AUSTRIA).
- Eogymnophthalma* Townsend, 1926a : 35. Type-species: *Eogymnophthalma orientalis* Townsend, 1926 [= *Tachina orbata* Wiedemann, 1830], by original designation. (SUMATRA).
- Talaractia* Malloch, 1930b : 305 (as subg. of *Actia*). Type-species: *Actia (Talaractia) baldwini* Malloch, 1930, by original designation.
- Tararactia*. Incorrect multiple original spelling of *Talaractia* Malloch.
- Ushizactia* Townsend, 1934 : 248. Type-species: *Actia uniseta* Malloch, 1930, by original designation. (MALAYA).

- argentifrons** Malloch, 1930b : 309 (*Actia*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., QLD.
- angustifrons*. Incorrect subsequent spelling, lapsus for *argentifrons* Malloch (Hardy, 1959 : 213).
- baldwini** Malloch, 1930b : 306 (*Actia*). Holotype ♂, QUEENSLAND: Palm Is. (SPHTM, Sydney) [examined]. **Comb. n.** – QLD.
- orbata** Wiedemann, 1830 : 336 (*Tachina*). Neotype ♀ (by designation of Crosskey, 1967d : 106), EASTERN INDIA: Assam, Azra (BMNH, London) [examined]. **Comb. n.** – N.S.W., QLD; NEW GUINEA; widespread in ORIENTAL REGION, MIDDLE EAST, AFRICA.
- aegyptia* Villeneuve, 1912 : 508 (*Gymnopareia*). Lectotype ♂ (by designation of Crosskey, 1966b : 108), EGYPT: Qaliūb (BMNH, London) [examined].
- orientalis* Townsend, 1926a : 35 (*Eogymnophthalma*). Lectotype ♂ (by fixation of Townsend, 1940 : 213), SUMATRA: Fort de Kock (ZM, Amsterdam) [examined].
- nigritula* Malloch, 1930b : 309 (*Actia*). Holotype ♀, QUEENSLAND: Cairns (SPHTM, Sydney) [examined].
- monticola* Malloch, 1930c : 143 (*Actia*). Holotype ♂ [head lost], PHILIPPINES: Negros, Cuernos Mts. (USNM, Washington) [examined].
- rotundipennis* Malloch, 1930c : 143 (*Actia*). Holotype ♀ [head lost], PHILIPPINES: Negros, Cuernos Mts. (USNM, Washington) [examined].
- sororcula* Mesnil, 1954a : 16 (*Strobliomyia*). Holotype ♀, ZAIRE REPUBLIC: Rutshuru (MRAC, Tervuren).
- plebeia** Malloch, 1930b : 310 (*Actia*). Holotype ♂, NEW SOUTH WALES: Coramba (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., QLD.
- plebia*. Incorrect subsequent spelling of *plebeia* Malloch (Hardy, 1959 : 213).

Tribe BLONDELIINI Robineau-Desvoidy

BLONDELIDAE Robineau-Desvoidy, 1863 (2) : 24. Type-genus: *Blondelia* Robineau-Desvoidy, 1830.

Genus ANAGONIA Brauer & Bergenstamm

- Anagonia* Brauer & Bergenstamm, 1891 : 348 (44). Type-species: *Anagonia spylosioides* Brauer & Bergenstamm, 1891 [= *Masicera rufifacies* Macquart, 1847], by original designation and monotypy.
- Acephana* Townsend, 1916c : 153. Type-species: *Masicera rubrifrons* Macquart, 1847, [= *Masicera rufifacies* Macquart, 1847], by original designation.
- Opsophana* Townsend, 1916c : 153. Type-species: *Masicera rufifacies* Macquart, 1847, by original designation.
- anguliventris** Malloch, 1932b : 273 (*Froggattimyia*). Holotype ♀, AUSTRALIAN CAPITAL TERRITORY: Canberra (USNM, Washington) [examined]. **Comb. n.** – A.C.T.
- grisea** Malloch, 1930b : 333 (*Delta*). Holotype ♀, WESTERN AUSTRALIA: Mullewa (ANIC, Canberra) [examined]. **Comb. n.** – W.A.
- lasiophthalma** Malloch, 1934 : 6 (*Froggattimyia*). Holotype ♀, AUSTRALIAN CAPITAL TERRITORY: Canberra, Black Mt. (ANIC, Canberra) [examined]. **Comb. n.** – A.C.T.
- lateralis** Macquart, 1846 : 291 (163) (*Masicera*). Lectotype ♂ (by designation of Crosskey, 1971 : 274), AUSTRALIA (BMNH, London) [examined]. **Comb. n.** – N.S.W., QLD.
- major** Malloch, 1930b : 334 (*Delta*). Holotype ♂, NEW SOUTH WALES: Eccleston, Allyn River (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W., QLD.
- opaca** Malloch, 1930b : 334 (*Delta*). Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. **Comb. n.** – N.S.W.

- rufifacies** Macquart, 1847 : 87 (71) (*Masicera*). Holotype ♂, 'TASMANIA' (BMNH, London) [examined]. – A.C.T., TASM.
rubrifrons Macquart, 1847 : 85 (69) (*Masicera*). Holotype ♀, TASMANIA (BMNH, London) [examined].
spylosioides Brauer & Bergenstamm, 1891 : 349 (45). Lectotype ♂ (by designation of Crosskey 1966b : 108), TASMANIA (NM, Vienna) [examined].
scutellata Malloch, 1930b : 334 (*Delta*). Holotype ♂, WESTERN AUSTRALIA: Mullewa (SPHTM, Sydney) [examined]. **Comb. n.** – A.C.T., N.S.W., VICT., W.A.

Genus *COMPSILURA* Bouché

- Compsilura* Bouché, 1834 : 58. Type-species: *Tachina concinnata* Meigen, 1824, by subsequent designation of Coquillett (1910 : 526). (EUROPE).
concinnata Meigen, 1824 : 412 (*Tachina*). Holotype ♀, CENTRAL EUROPE [? AUSTRIA or GERMANY] (? NM, Vienna, coll. von Winthem). – QLD; widespread OLD WORLD; NORTH AMERICA (introduced & established).

Genus *DELTOMYZA* Malloch

- Delta* Malloch, 1930b : 332. Type-species: *Delta australiensis* Malloch, 1930, by original designation. [Junior homonym of *Delta* de Saussure, 1855, and *Delta* Saalmueller, 1891.]
Deltomyza Malloch, 1931 : 298. [Replacement name for *Delta* Malloch.]
Mallochiola Strand, 1932 : 195. [Proposed as replacement name for *Delta* Malloch; junior homonym of *Mallochiola* Bergroth, 1925.]
australiensis Malloch, 1930b : 332 (*Delta*). Holotype ♂, WESTERN AUSTRALIA: Mullewa (SPHTM, Sydney) [examined]. – W.A.

Genus *FROGGATTIMYIA* Townsend

- Froggattimyia* Townsend, 1916c : 155. Type-species: *Froggattimyia hirta* Townsend, 1916, by original designation.
Protomeigenia Townsend, 1916c : 156. Type-species: *Protomeigenia aurea* Townsend, 1916, by original designation.
aurea Townsend, 1916c : 156 (*Protomeigenia*). Holotype ♂, NEW SOUTH WALES: Manilla (USNM, Washington) [examined]. – N.S.W.
fergusoni Malloch, 1934 : 4. Holotype ♂, WESTERN AUSTRALIA: Wyalkatchem (SPHTM, Sydney) [examined]. – W.A.
hirta Townsend, 1916c : 156. Holotype ♂, NEW SOUTH WALES: Sydney (publ. as 'Mittagong') (USNM, Washington) [examined]. – N.S.W., QLD.
nicholsoni Malloch, 1934 : 5. Holotype ♂, NEW SOUTH WALES: Lindfield (publ. as 'Sydney') (SPHTM, Sydney) [examined]. – N.S.W., QLD.
tillyardi Malloch, 1934 : 6. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined]. – A.C.T.
wentworthi Malloch, 1934 : 3. Holotype ♂, NEW SOUTH WALES: Wentworth Falls (SPHTM, Sydney) [examined]. – N.S.W., VICT. (Possibly = *nicholsoni*)

Genus *LECANIPA* Rondani

- Lecanipa* Rondani, 1859 : 156. Type-species: *Lecanipa patellifera* Rondani, 1859 [= *Tachina leucomelas* Meigen, 1824], by original designation. (EUROPE).
Lecanipus. Incorrect subsequent spelling of *Lecanipa* Rondani.
 Undescribed sp. (1) – VICT.
 Undescribed sp. (2) – S.A.

Genus **LIXOPHAGA** Townsend

Lixophaga Townsend, 1908 : 86. Type-species: *Lixophaga parva* Townsend, 1908, by original designation. (NORTH AMERICA).

Microceromasia Villeneuve, 1911 : 82. Type-species: *Ceromasia sphenophori* Villeneuve, 1911, by original designation. (NEW GUINEA).

sphenophori Villeneuve, 1911 : 82. (*Ceromasia*). Lectotype ♀ (by present designation), NEW GUINEA: Papua [Laloki River near Port Moresby] (ZM, Amsterdam) [examined]. – NEW GUINEA; MOLUCCAS. Introduced QLD (? established), FIJI (? established), HAWAII (established).

Genus **MEDINODEXIA** Townsend

Medinodexia Townsend, 1927a : 57. Type-species: *Medinodexia fulviventris* Townsend, 1927, by original designation. (SUMATRA).

morgani Hardy, 1934 : 37 (*Zosteromyia*). Lectotype ♂ (by present designation), NEW SOUTH WALES: Biniguy (NSWDA, Rydalmere) [examined]. **Comb. n.** – N.S.W., QLD; CEYLON.

Genus **MONOLEPTOPHAGA** Townsend

Monoleptophaga Baranov, 1938b : 411. Type-species: *Monoleptophaga caldwelli* Baranov, 1938, by original designation.

caldwelli Baranov, 1938 : 411. Lectotype ♂ (by designation of Sabrosky & Crosskey, 1969 : 47), QUEENSLAND: Nambour (BMNH, London) [examined]. – QLD.

Genus **PAREUPOGONA** Townsend

Pareupogona Townsend, 1916c : 157. Type-species: *Masicera oblonga* Macquart, 1847, by original designation.

oblonga Macquart, 1847 : 86 (70) (*Masicera*). Holotype ♂, TASMANIA (BMNH, London) [examined]. – TASM.

simplex Macquart, 1847 : 87 (71) (*Masicera*). Holotype ♂, TASMANIA (BMNH, London) [examined].

Genus **PAROPSIVORA** Malloch

Paropsivora Malloch, 1934 : 7. Type-species: *Paropsivora grisea* Malloch, 1934, by original designation.

australis Macquart, 1847 : 84 (68) (*Degeeria*). Holotype ♀, TASMANIA (BMNH, London) [examined]. **Comb. n.** – TASM.

graciliseta Macquart, 1847 : 88 (72) (*Phorocera*). Holotype ♂, TASMANIA (BMNH, London) [examined]. **Comb. n.** – N.S.W., QLD, TASM.

acutangulata Macquart, 1848 : 208 (48) (*Phorocera*). Holotype ♂, AUSTRALIA (BMNH, London) [examined]. **Syn. n.**

grisea Malloch, 1934 : 7. Holotype ♀, AUSTRALIAN CAPITAL TERRITORY: Blundell's (ANIC, Canberra) [examined] – A.C.T.

tessellata Macquart, 1846 : 293 (165) (*Phorocera*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Comb. n.** – TASM.

Genus **PILIMYIA** Malloch

Pilimyia Malloch, 1930b : 329. Type-species: *Pilimyia lasiophthalma* Malloch, 1930, by original designation.

lasiophthalma Malloch, 1930b : 329. Holotype ♂, NEW SOUTH WALES: Blue Mts (SPHTM, Sydney) [examined]. – N.S.W.

lateralis Macquart, 1846 : 293 (165) (*Phorocera*). Lectotype ♂ (by designation of Crosskey, 1971 : 282), 'TASMANIA' (MNHN, Paris) [examined]. **Comb. n.** – TASM. (?).

Genus **TRIGONOSPILA** Pokorný

Trigonospila Pokorný, 1886 : 191. Type-species: *Trigonospila picta* Pokorný, 1886 [= *Tachina ludio* Zetterstedt, 1848], by monotypy. (EUROPE).

Zosteromyia Brauer & Bergenstamm, 1891 : 376 (72). Type-species: *Myobia cingulata* Macquart sensu Brauer & Bergenstamm (misidentification) [= *Zosteromyia braueri* Townsend, 1933], by original designation. (Note: Townsend's belief that Brauer & Bergenstamm misidentified *cingulata* Macquart needs confirmation.)

Zosteromyiopsis Townsend, 1933 : 456. Type-species: *Myobia cingulata* Macquart, 1851, by original designation.

braueri Townsend, 1933 : 457 (*Zosteromyia*). Holotype ♂, TASMANIA (NM, Vienna). **Comb. n.** – QLD, TASM.

brevifacies Hardy, 1934 : 36 (*Zosteromyia*). Lectotype ♀ (by present designation), NEW SOUTH WALES: Tooloom (QM, Brisbane) [examined]. **Comb. n.** – N.S.W., TASM. (Possibly = *braueri*).

cingulata Macquart, 1851 : 179 (206) (*Myobia*). Lectotype ♂ (by designation of Crosskey, 1971 : 279), TASMANIA (MNHN, Paris) [examined]. – N.S.W., QLD, TASM., VICT.

fasciata Hardy, 1934 : 35 (*Zosteromyia*). Syntypes ♂, ♀, TASMANIA: Hobart, Mt Wellington & VICTORIA: Melbourne (not located). **Comb. n.** – TASM., VICT.

The generic position requires confirmation when type-material located.

Genus **ZENARGOMYIA** Crosskey

Zenargomyia Crosskey, 1964 : 18. Type-species: *Zenargomyia moorei* Crosskey, 1964, by original designation.

moorei Crosskey, 1964 : 20. Holotype ♂, NEW SOUTH WALES: Matong S.F. (AM, Sydney) [examined]. – N.S.W.

Genus **ZOSTEROMEIGENIA** Townsend

Zosteromeigenia Townsend, 1919a : 579. Type-species: *Zosteromeigenia mima* Townsend, 1919, by original designation.

mima Townsend, 1919a : 579. Holotype ♂, QUEENSLAND: Hamilton, Upper North Pine (USNM, Washington) [examined]. – QLD.

longicornis Hardy, 1934 : 36 (*Zosteromyia*). Lectotype ♂ (by present designation), QUEENSLAND: Mt. Glorious (UQ, Brisbane) [examined]. **Syn. n.**

Unplaced species of *Blondeliini*

minor Hardy, 1934 : 36 (*Zosteromyia*). Syntypes ♂, TASMANIA: Strahan (not located). – TASM.

similis Macquart, 1851 : 167 (194) (*Masicera*). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. – TASM. (?).

Holotype of this species is in dreadful condition but is apparently a Blondeliine. The prosternum is haired and the parafacials fully haired.

Tribe EXORISTINI Robineau-Desvoidy

EXORISTIDAE Robineau-Desvoidy, 1863 (1) : 244. Type-genus: *Exorista* Meigen, 1803.

Genus AUSTROPHOROCERA Townsend

Austrophorocera Townsend, 1916c : 157. Type-species: *Phorocera biserialis* Macquart, 1847, by original designation

Glossosalia Mesnil, 1947 : 62 (as subg. of *Spoggosia* Rondani). [Unavailable: no fixation of a type-species from two included species.]

Glossosalia Mesnil, 1960 : 606 (as subg. of *Spoggosia* Rondani). Type-species: *Phorocera grandis* Macquart, 1851, by original designation.

biserialis Macquart, 1847 : 89 (73) (*Phorocera*). Lectotype ♂ (by fixation of Townsend, 1940 : 158), TASMANIA (BMNH, London) [examined]. – TASM., VICT.

grandis Macquart, 1851 : 171 (198) (*Phorocera*). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. – N.S.W., S.A., QLD; NEW GUINEA; ORIENTAL REGION.

Undetermined sp. – N.S.W.

Genus CHAETORIA Becker

Chaetoria Becker, 1908 : 113. Type-species: *Chaetoria stylata* Becker, 1908, by monotypy. (CANARY ISLANDS).

Vorina Malloch, 1930b : 321. Type-species: *Vorina setibasis* Malloch, 1930, by original designation.

setibasis Malloch, 1930b : 321 (*Vorina*). Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

Genus EOZENILLIA Townsend

Eozenillia Townsend, 1926c : 542. Type-species: *Eozenillia equatorialis* Townsend, 1926, by original designation. (SINGAPORE).

remota Walker, 1852 : 280 (*Tachina*). Holotype ♀, NEW SOUTH WALES (BMNH, London) [examined]. **Comb. n.** – N.S.W., S.A.

flavipalpis Macquart, 1855 : 122 (102) (*Phorocera*). Holotype ♀ [not ♂], NEW SOUTH WALES: Sydney (BMNH, London) [examined].

Genus EXORISTA Meigen

Exorista Meigen, 1803 : 280. Type-species: *Musca larvarum* Linnaeus, 1758, by monotypy. (EUROPE).

Thrycolyga Rondani, 1856 : 68. Type-species: *Thrycolyga nova* Rondani, 1856, by original designation. (ITALY).

Eutachina Brauer & Bergenstamm, 1889 : 98 (30). Type-species: *Musca larvarum* Linnaeus, 1758, by monotypy. (EUROPE). [Junior objective synonym of *Exorista*.]

Podotachina Brauer & Bergenstamm, 1891 : 350 (46). Type-species: *Tachina sorbillans* Wiedemann, 1830, by subsequent designation of Townsend (1916a : 8). (CANARY ISLANDS).

Tricholyga. Incorrect subsequent spelling of *Thrycolyga* Rondani.
[*Tachina* Meigen sensu authors (misidentification)]

auriceps Macquart, 1851 : 158 (185). Holotype ♂, [TASMANIA: publ. as Oceania] (MNHN, Paris) [examined]. – TASM. (Probably = *flaviceps*).

Mesnil (1960 : 578) placed *auriceps* (with the wrongly cited date 1849) as a synonym of *sorbillans* (Wiedemann) and Herting (1962 : 80) wrote that 'Die Type von *sorbillans* Wied. aus Teneriffa . . . ist mit *auriceps* Macq. identisch'. Though *auriceps* undoubtedly belongs to the *sorbillans* complex it is here considered insufficiently substantiated that *auriceps* is synonymous with *sorbillans* s. str. (particularly as the male genitalia of *auriceps* holotype have never been examined) and the name *auriceps* is here maintained as valid pending further study.

coras Walker, 1849 : 785 (*Tachina*). Holotype ♂ [abdomen lost], WESTERN AUSTRALIA: Perth (BMNH, London) [examined]. – N.S.W., W.A.

curriei Curran, 1938 : 197 (*Thrycolyga*). Holotype ♂, QUEENSLAND: Lawnton (BMNH, London) [examined]. – QLD.

doddi Curran, 1938 : 201 (*Zenillia*). Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. – QLD.

flaviceps Macquart, 1847 : 83 (67). Holotype ♂, TASMANIA (BMNH, London) [examined]. – N.S.W., S.A., TASM., VICT.

consanguinea Macquart, 1851 : 167 (194) (*Masicera*). Holotype ♂, [TASMANIA: publ. as Oceania] (MNHN, Paris) [examined]. **Syn. n.**

mungomeryi Baranov, 1938b : 410 (*Eutachina*). Lectotype ♂ (by designation of Sabrosky & Crosskey, 1969 : 43), QUEENSLAND: Gordonvale (BMNH, London) [examined]. – QLD.

psychidivora Coquillett, 1904 : 137 (*Tachina*). Holotype ♂, WESTERN AUSTRALIA (USNM, Washington) [examined]. – W.A.

sorbillans Wiedemann, 1830 : 311 (*Tachina*). Lectotype ♂ (by fixation of Townsend, 1932 : 45), CANARY ISLANDS: Teneriffe (NM, Vienna). – QLD; NEW GUINEA; widespread S. PALAE-ARCTIC, ORIENTAL, ETHIOPIAN REGIONS.

This species was described from at least two syntypes, as Wiedemann stated 'In v. Winthem's und meiner Sammlung'. There are no surviving specimens in Wiedemann's collection, but an original syntype exists in von Winthem's collection (Vienna). This specimen was cited by Townsend (1932 : 45) as 'male Ht [=holotype] in Wien, labelled "Teneriffa : Coll Winthem"', who thus provided a valid fixation of the specimen as lectotype. The lectotype was not available during the preparation of the present work, but has been examined by Herting (1962 : 80).

Confirmation is needed that Queensland specimens are truly conspecific with the lectotype.

tristis Curran, 1938 : 203 (*Zenillia*). Holotype ♀, QUEENSLAND: Cairns (DEI, Eberswalde) [examined]. – QLD.

Genus *HILLOMYIA* Crosskey **nom. n.**

Hillia Malloch, 1929b : 328. Type-species: *Hillia polita* Malloch, 1929, by original designation.
[Junior homonym of *Hillia* Grote, 1883.]

Hillomyia Crosskey **nom. n.** [New name for *Hillia* Malloch.]

polita Malloch, 1929b : 328. Holotype ♀, NORTHERN TERRITORY: Darwin (ANIC, Canberra) [examined]. **Comb. n.** – N.T.

Genus *SPOGGOSIA* Rondani*

Spoggosia Rondani, 1859 : 182. Type-species: *Spoggosia occlusa* Rondani, 1859 [= *Salia echinura* Robineau-Desvoidy, 1830], by monotypy. (EUROPE).

* See Appendix, p. 209.

micropalpis Malloch, 1930b : 321 (*Statomyia*). Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – A.C.T., N.S.W., TASM., VICT.
Undescribed sp. – N.S.W.

Genus *STOMATOMYIA* Brauer & Bergenstamm

- Statomyia* Brauer & Bergenstamm, 1889 : 98 (30). Type-species: *Chetogena filipalpis* Rondani, 1859, by monotypy. (ITALY).
Plagiprospherysa Townsend, 1892a : 113. Type-species: *Plagiprospherysa valida* Townsend, 1892 [= *Prospheysa parvipalpis* Wulp, 1890], by original designation. (NORTH AMERICA).
acuminata Rondani, 1859 : 180 (*Chetogena*). Syntypes [? sex], ITALY (MZ, Florence). – N.S.W. QLD, W.A. (vide Malloch, 1930b : 320); S. PALAEARCTIC REG., JAPAN; ORIENTAL REG. including INDONESIA.
tricholygoides Bezzi, 1928 : 205. Holotype ♂, FIJI: Ovalau (BMNH, London) [examined]. – N.S.W., QLD (?); FIJI, NEW GUINEA, SOLOMONS.

Tribe *ETHILLINI* Mesnil

ETHYLLINA [sic] Mesnil, 1944 : 23. Type-genus: *Ethilla* Robineau-Desvoidy, 1863.

Genus *ETHILLA* Robineau-Desvoidy

- Ethilla* Robineau-Desvoidy, 1863 : 202. Type-species: *Tachina aemula* Meigen, 1824, by original designation. (EUROPE).
Ethylla. Incorrect subsequent spelling of *Ethilla* Robineau-Desvoidy.
translucens Macquart, 1851 : 162 (189) (*Exorista*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Comb. n.** – S.A., TASM., VICT.

Genus *PHOROCEROSOMA* Townsend

- Phorocerosoma* Townsend, 1927a : 61. Type-species: *Phorocerosoma forte* Townsend, 1927 [= *Masicera vicaria* Walker, 1847], by original designation. (SUMATRA).
cilipes Macquart, 1847 : 88 (72) (*Phorocera*). Holotype ♂, TASMANIA (BMNH, London) [examined]. **Comb. n.** – TASM.
rufomaculata Macquart, 1851 : 160 (187) (*Exorista*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Syn. n.**
This species is certainly an ethilline, but there are some differences from *Phorocerosoma* and inclusion in this genus is an interim measure.
postulans Walker, 1861a : 240 (*Nemoraea*). Holotype ♂ [head lost], NEW GUINEA: Dorey (BMNH, London) [examined]. – N.T., QLD; NEW GUINEA; SOLOMONS; widespread ORIENTAL REGION and tropical AFRICA.
mysolana Walker, 1864 : 213 (*Masicera*). Holotype ♀, INDONESIA: Moluccas, Misoöl (publ. as Mysol) (BMNH, London) [examined].
anomala Baranov, 1936 : 99. Lectotype ♀ (by designation of Crosskey, 1966b : 108), FORMOSA: Koshun, Kankau (DEI, Eberswalde) [examined].
nitidicauda Curran, 1938 : 202 (*Zenillia*). Holotype ♂, QUEENSLAND: Cairns (SPHTM, Sydney) [examined].

Genus **MYCTEROMYIELLA** Mesnil

Mycteromyia Mesnil, 1950a : 107. Type-species: *Mycteromyia laetifica* Mesnil, 1950, by original designation. (NEW GUINEA). [Junior homonym of *Mycteromyia* Philippi, 1865.]

Mycteromyiella Mesnil, 1965 : 232. [Replacement name for *Mycteromyia* Mesnil.]

Undescribed sp. – N.S.W.

Tribe **WINTHEMIINI** Townsend

WINTHEMIIAE Townsend, 1913 : 52. Type-genus: *Winthemia* Robineau-Desvoidy, 1830.

Genus **CRYPsINA** Brauer & Bergenstamm

Crypsina Brauer & Bergenstamm, 1889 : 97 (29). Type-species: *Crypsina prima* Brauer & Bergenstamm, 1889, by original designation and monotypy.

Amplipila Curran, 1927c : 446. Type-species: *Amplipila versicolor* Curran, 1927 [= *Crypsina prima* Brauer & Bergenstamm, 1889], by original designation.

prima Brauer & Bergenstamm, 1889 : 97 (29). Holotype ♀, QUEENSLAND: Rockhampton (NM, Vienna) [examined]. – QLD.

versicolor Curran, 1927c : 446 (*Amplipila*). Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined].

Genus **NEMORILLA** Rondani

Nemorilla Rondani, 1856 : 66. Type-species: *Tachina maculosa* Meigen, 1824, by original designation. (EUROPE).

Undetermined sp. – QLD. (The mis-associated ♀ paralectotype of *Sisyröpa cinerea* Brauer & Bergenstamm from Cape York is a specimen of *Nemorilla* but the species has not been determined).

Genus **WINTHEMIA** Robineau-Desvoidy

Winthemia Robineau-Desvoidy, 1830 : 173. Type-species: *Tachina variegata* Meigen, 1824, by subsequent designation of Robineau-Desvoidy (1863 : 207). (EUROPE).

Pseudokea Townsend, 1928 : 393. Type-species: *Pseudokea neowinthemioides* Townsend, 1928, by original designation. (PHILIPPINES).

Winthemya. Incorrect subsequent spelling of *Winthemia* Robineau-Desvoidy.

lateralis Macquart, 1843 : 215 (58) (*Eurigaster*). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. – N.S.W., S.A., TASM.

brevisetosa Macquart, 1846 : 282 (154) (*Nemoraea*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Syn. n.**

lata Macquart, 1848 : 207 (47) (*Exorista*). Holotype ♂, AUSTRALIA (BMNH, London) [examined]. **Syn. n.**

marginata Macquart, 1851 : 161 (188) (*Exorista*). Lectotype ♂ (by designation of Crosskey, 1971 : 269), TASMANIA (MNHN, Paris) [examined]. **Syn. n.**

albiceps Malloch, 1930b : 349. Holotype ♂, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. **Syn. n.**

albicens. Incorrect multiple original spelling of *albiceps* Malloch.

neowinthemioides Townsend, 1928 : 394 (*Pseudokea*). Holotype ♂, PHILIPPINES: Mindanao, Cagayan (USNM, Washington) [examined]. – N.S.W., QLD; NEW GUINEA, PHILIPPINES, INDONESIA.

diversa Malloch, 1930b : 348. Holotype ♂, NEW SOUTH WALES: Killara, Allowrie (SPHTM, Sydney) [examined]. **Syn. n.**

trichopareia Schiner, 1868 : 327 (*Exorista*). Type(s) [? sex], [AUSTRALIA] (not located, possibly lost). – QLD. (Confirmation of identity required).

This species was, as Malloch (1930b : 349) stated, unsatisfactorily described by Schiner who did not state the number of specimens, or their sex or their locality of origin. Nothing in the description indicates positively that *Winthemia* is the correct genus, and Malloch's (1930b) placement was made by guesswork from Brauer & Bergenstamm's (1891 : 441) earlier placement in *Chaetolyga*; it is from their statement of 'Australien' that the provenance of Schiner's species is known. The original type-material has never been studied and cannot now be found amongst Schiner's types in NM, Vienna.

Tribe CARCELIINI Townsend

CARCELIINAE Townsend, 1913 : 52. Type-genus: *Carcelia* Robineau-Desvoidy, 1830.

Genus ARGYROPHYLAX Brauer & Bergenstamm

Argyrophylax Brauer & Bergenstamm, 1889 : 163 (95). Type-species: *Tachina albincisa* Wiedemann, 1830, by original designation and monotypy. (WEST INDIES).

solomonica Baranov, 1938a : 170 (*Bactromyia*, as subsp. of *fransseni* Baranov). Lectotype ♂ (by designation of Sabrosky & Crosskey, 1969 : 36), SOLOMON ISLANDS: Russell Is. (BMNH, London) [examined]. – QLD; NEW GUINEA, SOLOMONS.

Genus ARGYROTHELAIRA Townsend

Argyrothelaira Townsend, 1916a : 311. Type-species: *Argyrothelaira froggattii* Townsend, 1916, by original designation. (SOLOMON ISLANDS).

melancholica Mesnil, 1944 : 29 (*Carcelia*). Holotype ♀ [head and most legs lost], QUEENSLAND: Cairns (DEI, Eberswalde) [examined]. **Comb. n.** – QLD; NEW GUINEA.

Genus CARCELIA Robineau-Desvoidy

Carcelia Robineau-Desvoidy, 1830 : 176. Type-species: *Carcelia bombylans* Robineau-Desvoidy, 1830, by subsequent designation of Townsend (1916a : 6). (EUROPE).

Subgenus CARCELIA Robineau-Desvoidy

Carcelia Robineau-Desvoidy, 1830 : 176. Type-species: *Carcelia bombylans* Robineau-Desvoidy, 1830, by subsequent designation of Townsend (1916a : 6). (EUROPE).

hardyi Curran, 1938 : 200 (*Zenillia*). Holotype ♂, QUEENSLAND: Brisbane (SPHTM, Sydney) [examined]. – QLD, VICT. (?).

tasmanica Robineau-Desvoidy, 1863 : 240. Holotype ♂, TASMANIA (lost). – TASM.
scutellaris Robineau-Desvoidy, 1863 : 240 (*Phorocera*). [Unavailable name, first published as a synonym.]

Robineau-Desvoidy named *C. tasmanica* for a male specimen said by him to be in the Paris Museum and to be labelled 'Phorocera scutellaris' by Macquart. Macquart did not publish this name, but it was cited by Robineau-Desvoidy in synonymy with *tasmanica*. The name *scutellaris* is therefore attributable to Robineau-Desvoidy and is unavailable under Article 11(d) of the ICZN. The type-specimen cannot be found in MNHN, Paris, and is presumed lost.

Subgenus **SENOMETOPIA** Macquart

Senometopia Macquart, 1834 : 296 (as genus). Type-species: *Carcelia aurifrons* Robineau-Desvoidy, 1830 [= *Tachina excisa* Fallén, 1820], by subsequent designation of Townsend (1916a : 8). (EUROPE).

Stenometopia Agassiz, 1846 : 351. Unjustified emendation of *Senometopia* Macquart.

Eocarcelia Townsend, 1919a : 582. Type-species: *Eocarcelia ceylanica* Townsend, 1919, by original designation. (CEYLON). **Syn. n.**

Eocarceliopsis Townsend, 1928 : 392. Type-species: *Eocarceliopsis bakeri* Townsend, 1928, by original designation. (PHILIPPINES). **Syn. n.**

Eucarcelia Baranov, 1934b : 393. Type-species: *Tachina excisa* Fallén, 1820, by original designation. (EUROPE).

Dicephalomyia Malloch, 1935 : 337. Type-species: *Dicephalomyia rufiventris* Malloch, 1935, by original designation. (BORNEO). **Syn. n.**

cinerea Brauer & Bergenstamm, 1891 : 346 (42) (*Sisyropa*). Lectotype ♂ (by present designation), QUEENSLAND: Rockhampton (NM, Vienna) [examined]. — QLD; NEW GUINEA.

cosmophilae Curran, 1938 : 200 (*Zenillia*). Holotype ♂, QUEENSLAND (BMNH, London) [examined]. — QLD.

murina Curran, 1938 : 198 (*Zenillia*). Holotype ♂, NEW SOUTH WALES: Wee Waa (BMNH, London) [examined]. — N.S.W., QLD.

noctuae Curran, 1938 : 199 (*Zenillia*). Holotype ♂, QUEENSLAND: Lawnton (BMNH, London) [examined]. — QLD. (Possibly = *illota* Curran, 1927, of Ethiopian Region).

Genus **CARCELIMYIA** Mesnil

Carcelimyia Mesnil, 1944 : 26. Type-species: *Exorista dispar* Macquart, 1851, by original designation.

dispar Macquart, 1851 : 159 (186) (*Exorista*). Lectotype ♂ (by designation of Crosskey, 1971 : 268), AUSTRALIA (MNHN, Paris) [examined]. — N.S.W., N.T., W.A.

Tribe **ANACAMPTOMYIINI** Townsend

ANACAMPTOMYIINI Townsend, 1936 : 35, 38, 41. Type-genus: *Anacamptomyia* Bischof, 1904.

Genus **ANACAMPTOMYIA** Bischof

Anacamptomyia Bischof, 1904 : 79. Type-species: *Anacamptomyia africana* Bischof, 1904, by monotypy. (SOUTH AFRICA).

Vespivora Malloch, 1930b : 347. Type-species: *Vespivora nigriventris* Malloch, 1930, by original designation.

nigriventris Malloch, 1930b : 347 (*Vespivora*). Holotype ♂, QUEENSLAND: Eidsvold (ANIC, Canberra) [examined]. — N.S.W., QLD.

Genus **EUVESPIVORA** Baranov

Euvespivora Baranov, 1942 : 161. Type-species: *Euvespivora orientalis* Baranov, 1942, by original designation. (JAVA).

Xenosturmia Mesnil, 1944 : 26. Type-species: *Xenosturmia testaceipes* Mesnil, 1944 [= *Eurygaster decipiens* Walker, 1859], by original designation. (NEW BRITAIN).

- decipiens** Walker, 1859 : 100 (*Eurygaster*). Holotype ♀, ARU ISLANDS (BMNH, London) [examined] – N.S.W., QLD; MALAYA, ARU ISLANDS, SOLOMONS, NEW CALEDONIA.
salomonica Baranov, 1942 : 163. Holotype ♀, SOLOMON ISLANDS: Tulagi (BMNH, London) [examined].
testaceipes Mesnil, 1944 : 26 (*Xenosturmia*). Holotype ♀, NEW BRITAIN: Kinigunang (DEI, Eberswalde) [examined].

Genus **KORALLIOMYIA** Mesnil

Koralliomyia Mesnil, 1950a : 114. Type-species: *Koralliomyia portentosa* Mesnil, 1950, by original designation. (INDIA).

Undetermined spp. (possibly *portentosa* Mesnil). – QLD.

Tribe **STURMIINI** Robineau-Desvoidy

STURMIDAE Robineau-Desvoidy, 1863 (1) : 885. Type-genus: *Sturmia* Robineau-Desvoidy, 1830.

Genus **ANAMASTAX** Brauer & Bergenstamm

Anamastax Brauer & Bergenstamm, 1891 : 349 (45). Type-species: *Blepharipeza goniaeformis* Macquart sensu Brauer & Bergenstamm (misidentification) [= *Anamastax australis* Townsend, 1933], by original designation.

braueri Hardy, 1938 : 62 (*Tritaxys*, as replacement name for *australis* Townsend). – N.S.W., QLD.

australis Townsend, 1933 : 473. Holotype ♂, QUEENSLAND (NM, Vienna).

Hardy (1938 : 59) treated *Anamastax* as a synonym of *Tritaxys*, thereby bringing *A. australis* Townsend into the same genus as *T. australis* Macquart. He therefore published the replacement name *braueri* for the secondarily homonymous *australis* Townsend. Regrettably, as this change was made prior to 1960, the name *braueri* stands valid for the species under the present ICZN even though the species involved are no longer considered congeneric.

Undescribed sp. – N.S.W.

Genus **ARRHENOMYZA** Malloch

Arrhenomyza Malloch, 1929b : 322. Type-species: *Arrhenomyza conspicua* Malloch, 1929, by original designation.

conspicua Malloch, 1929b : 322. Holotype ♂, WESTERN AUSTRALIA: Eradu, near Geraldton (ANIC, Canberra) [examined]. – W.A.

Genus **BLEPHARELLA** Macquart

Blepharella Macquart, 1851 : 176 (203). Type-species: *Blepharella lateralis* Macquart, 1851, by monotypy. (INDIA).

Podomyia Brauer & Bergenstamm, 1889 : 96 (28). Type-species: *Eurygaster setosa* Doleschall, 1858 [= *Blepharella lateralis* Macquart, 1851], by original designation. (AMBOYNA).

Phryxosturmia Townsend, 1927a : 68. Type-species: *Phryxosturmia jacobsoni* Townsend, 1927 [= *Blepharella lateralis* Macquart, 1851], by original designation. (SUMATRA).

Apilia Malloch, 1930b : 345. Type-species: *Apilia ciliifera* Malloch, 1930 [= *Blepharella lateralis* Macquart, 1851], by original designation.

lateralis Macquart, 1851 : 177 (204). Holotype ♂, INDIA: Pondicherry (MNHN, Paris) [examined]. — QLD; NEW GUINEA, SOLOMONS, widespread ORIENTAL REGION.

maculata Macquart, 1851 : 173 (200) (*Phorocera*). Holotype ♂, AUSTRALIA (MNHN, Paris) [examined]. **Syn. n.**

ciliifera Malloch, 1930b : 345 (*Apilia*). Holotype ♂, QUEENSLAND: Eidsvold (ANIC, Canberra) [examined].

(For other synonyms, based on Oriental types, see Crosskey, 1966b : 106)

Genus *BLEPHARIPA* Rondani

Blepharipa Rondani, 1856 : 71. Type-species: *Senometopia ciliata* Macquart, 1835 [= *Nemoraeta scutellata* Robineau-Desvoidy, 1830], by original designation. (FRANCE).

Verreauxia Robineau-Desvoidy, 1863 : 893. Type-species: *Verreauxia auripilis* Robineau-Desvoidy, 1863, by original designation. [Junior homonym of *Verreauxia* Hartlaub, 1856.]

Ugimyia Rondani, 1870 : 137. Type-species: *Ugimyia sericariae* Rondani, 1870, by monotypy. (JAPAN).

Blepharipoda Brauer & Bergenstamm, 1889 : 96 (28). Type-species: *Nemoraeta scutellata* Robineau-Desvoidy, 1830, by monotypy. (FRANCE). [Junior homonym of *Blepharipoda* Randall, 1840].

Crossocosmia Mik, 1890 : 313. Type-species: *Ugimyia sericariae* Rondani, 1870 (as *sericariae* Cornalia), by original designation. [Junior objective synonym of *Ugimyia* Rondani.] (JAPAN).

Eoparachaeta Townsend, 1927a : 70. Type-species: *Eoparachaeta orientalis* Townsend, 1927 [= *Tachina zebina* Walker, 1849], by original designation. (SUMATRA).

Sumatrosturmia Townsend, 1927a : 70. Type-species: *Sumatrosturmia orbitalis* Townsend, 1927, by original designation. (SUMATRA).

Indosturmia Townsend, 1932 : 49. Type-species: *Crossocosmia indica* Brauer & Bergenstamm, 1893, by original designation. (INDIA).

Chrysopygia Townsend, 1933 : 471. Type-species: *Chrysopygia auricaudata* Townsend, 1933, by original designation. (JAVA).

auripilis Robineau-Desvoidy, 1863 : 894 (*Verreauxia*). Holotype ♂, TASMANIA (lost). **Comb. n.** — TASM., N.S.W. (?).

coesiofasciata Macquart, 1851 : 165 (192) (*Masicera*). Holotype ♀, AUSTRALIA (MNHN, Paris) [examined]. **Comb. n.** — N.S.W.

fulviventris Macquart, 1851 : 165 (192) (*Masicera*). Lectotype ♂ (by designation of Crosskey, 1971 : 274), 'TASMANIA' (MNHN, Paris) [examined]. **Comb. n.** — N.S.W., QLD, TASM. (?). (Possibly = *sugens* Wiedemann of Oriental Region)

australis Walker, 1852 : 279 (*Tachina*). Holotype ♂, NEW SOUTH WALES (BMNH, London) [examined]. **Syn. n.**

Genus *CALOZENILLIA* Townsend

Calozenillia Townsend, 1927a : 67. Type-species: *Calozenillia auronigra* Townsend, 1927, by original designation. (SUMATRA).

olmus Walker, 1849 : 775 (*Tachina*). Holotype ♀, AUSTRALIA (BMNH, London) [examined]. — QLD.

picta Curran, 1938 : 202 (*Zenillia*). Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. — QLD.

Genus *EURYGASTROPSIS* Townsend

Eurygastropsis Townsend, 1916c : 158. Type-species: *Eurigaster tasmaniae* Walker, 1858, by original designation.

- Calopygidia* Malloch, 1930b : 349. Type-species: *Calopygidia analis* Malloch, 1930 [= *Eurigaster tasmaniae* Walker, 1858], by original designation.
- tasmaniae*** Walker, 1858 : 197 (*Eurigaster*). Holotype ♂ [not ♀], TASMANIA (BMNH, London) [examined]. – N.S.W., QLD, TASM., W.A.; NEW GUINEA (?).
- analis* Malloch, 1930b : 350 (*Calopygidia*). Holotype ♂, NEW SOUTH WALES: Barrington Tops (ANIC, Canberra) [examined].

Genus **PALEXORISTA** Townsend

- Palexorista* Townsend, 1921 : 134. Type-species: *Tachina succini* Giebel, 1862 [= *Masicera solennis* Walker, 1859], by original designation. (Presumed ORIENTAL: *succini* based on holotype in copal, see Crosskey, 1966c : 133).
- Sumatrodoria* Townsend, 1927a : 64. Type-species: *Sumatrodoria summaria* Townsend, 1927, by original designation. (SUMATRA).
- Prosturmia* Townsend, 1927a : 69. Type-species: *Prosturmia profana* Townsend, 1927 [= *Masicera solennis* Walker, 1859], by original designation. (SUMATRA).
- bancrofti*** Crosskey, 1967c : 85. Holotype ♂, QUEENSLAND: Burpengary (ANIC, Canberra) [examined]. – QLD.
- curvipalpis*** Wulp, 1893 : 162 (*Crossocosmia*). Lectotype ♂ (by designation of Crosskey, 1967c : 68), JAVA (RMNH, Leiden) [examined]. – QLD; NEW GUINEA, SOLOMONS, widespread ORIENTAL REGION.
- uniseta* Baranov, 1932 : 75 (*Sturmia*). Lectotype ♂ (by designation of Crosskey, 1967c : 68), FORMOSA: Kankau, Koshun (DEI, Eberswalde) [examined].
- lucagus*** Walker, 1849 : 678 (*Tachina*). Holotype ♂, CHINA: Foo-chow-foo (BMNH, London) [examined]. – N.T.; NEW GUINEA; widespread ORIENTAL REGION.
- macquarti*** Crosskey **nom. n.** [Replacement name for *Masicera auriceps* Macquart, 1851.] *auriceps* Macquart, 1851 : 168 (195) (*Masicera*). Lectotype ♀ (by designation of Crosskey, 1971 : 273), 'TASMANIA' (MNHN, Paris) [examined]. [Junior primary homonym of *Masicera auriceps* Macquart, 1843.]
- solennis*** Walker, 1859 : 98 (*Masicera*). Holotype ♂ [not ♀], ARU ISLANDS (BMNH, London) [examined]. – QLD; widespread ORIENTAL REGION, MELANESIA and MICRONESIA; TONGA.
- profana* Townsend, 1927a : 69 (*Prosturmia*). Lectotype ♂ (by designation of Crosskey, 1969 : 100), SUMATRA: Fort de Kock (ZM, Amsterdam) [examined].
- inconspicuell* Baranov, 1932 : 79 (*Sturmia*). Lectotype ♂ (by designation of Crosskey, 1967c : 57), FORMOSA: Kankau, Koshun (DEI, Eberswalde) [examined].
- (For further synonymy see Crosskey, 1967c : 57.)
- sororcula*** Mesnil, 1949b : 30 (*Drino*). Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. – QLD.
- subanajama*** Townsend, 1927a : 69 (*Prosturmia*). Lectotype ♂ (by designation of Crosskey, 1967c : 55), SUMATRA: Suban Ajam (ZM, Amsterdam) [examined]. – QLD; NEW GUINEA, SOLOMONS, MALAYSIA, INDONESIA.

Genus **PALIA** Curran

- Palia* Curran, 1927c : 443. Type-species: *Palia aureocauda* Curran, 1927, by original designation.
- aureocauda*** Curran, 1927c : 444. Holotype ♂, QUEENSLAND: Kuranda (DEI, Eberswalde) [examined]. – QLD.

Genus **PALIANA** Curran

- Paliana* Curran, 1927c : 445. Type-species: *Paliana basalis* Curran, 1927, by original designation.

basalis Curran, 1927c : 445. Holotype ♂, QUEENSLAND: Kuranda (DEI, Eberswalde) [examined]. – QLD.

intensa Curran, 1927c : 446. Holotype ♀, QUEENSLAND: Kuranda (DEI, Eberswalde) [examined]. – QLD. (Probably = *basalis*)

Genus **PARADRINO** Mesnil

Paradrino Mesnil, 1949b : 8, 35 (as subg. of *Drino* Robineau-Desvoidy). Type-species: *Sturmia halli* Curran, 1939, by monotypy. (AFRICA).

laevicula Mesnil, 1951 : 197 (*Drino*). Holotype ♀, FORMOSA: Kankau, Koshun (DEI, Eberswalde) [examined]. – QLD; NEW GUINEA; widespread ORIENTAL REGION.

Genus **PARAGONIA** Mesnil

Paragonia Mesnil, 1950a : 106. Type-species: *Paragonia portentosa* Mesnil, 1950, by original designation.

portentosa Mesnil, 1950a : 106. Holotype ♂, WESTERN AUSTRALIA: Waroona (CNC, Ottawa, ex coll. Mesnil) [examined]. – W.A.

Genus **POLYCHAETA** Macquart

Polychaeta Macquart, 1851 : 154 (181). Type-species: *Polychaeta nigra* Macquart, 1851, by monotypy.

nigra Macquart, 1851 : 154 (181). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. – A.C.T., N.S.W., TASM. (?).

subpubescens Macquart, 1851 : 172 (199) (*Phorocera*). Holotype ♀ [not ♂], 'TASMANIA' (MNHN, Paris) [examined]. **Syn. n.**

Genus **QUADRA** Malloch

Quadra Malloch, 1929b : 320. Type-species: *Quadra ornata* Malloch, 1929, by original designation.

ornata Malloch, 1929b : 320. Holotype ♀, WESTERN AUSTRALIA: King George's Sound (AM, Sydney) [examined]. – W.A.

Genus **SISYROPA** Brauer & Bergenstamm

Sisyropa Brauer & Bergenstamm, 1889 : 163 (95). Type-species: *Tachina thermophila* Wiedemann, 1830, by original designation. (JAVA).

taylori Curran, 1938 : 204 (*Zenillia*). Holotype ♂, QUEENSLAND: Innisfail (SPHTM, Sydney) [examined]. – N.T., QLD; NEW GUINEA, MOLUCCAS.

Undetermined spp. (with bare eyes). – QLD.

Genus **STURMIA** Robineau-Desvoidy

Sturmia Robineau-Desvoidy, 1830 : 171. Type-species: *Sturmia vanessae* Robineau-Desvoidy, 1830 [= *Tachina bella* Meigen, 1824], by subsequent designation of Robineau-Desvoidy (1863 : 888).

convergens Wiedemann, 1824 : 43 (*Tachina*). Lectotype ♀ (by designation of Crosskey, 1963 : 78), INDIA (UZM, Copenhagen) [examined]. – N.S.W., QLD; NEW GUINEA; wide-spread ORIENTAL REGION.

setilatera Wiedemann, 1830 : 321 (*Tachina*). Lectotype ♂ (by designation of Crosskey, 1966a : 678), 'IND. OR.' (probably = INDIA) (UZM, Copenhagen) [examined].

Undetermined sp. – S.A.

Genus **TASMANIOMYIA** Townsend

Chlorogaster Macquart, 1851 : 157 (184). Type-species: *Chlorogaster tasmanensis* Macquart, 1851, by monotypy. [Junior homonym of *Chlorogaster* Swainson, 1839.]

Tasmaniomyia Townsend, 1916c : 152. Type-species: *Masicera viridiventris* Macquart, 1847, by original designation.

Chlorogastrina Crosskey, 1967 : 9. [Replacement name for *Chlorogaster* Macquart.] **Syn. n.**

tasmanensis Macquart, 1851 : 157 (184) (*Chlorogaster*). Lectotype ♂ (by designation of Crosskey, 1971 : 264), 'TASMANIA' (MNHN, Paris) [examined]. **Comb. n.** – TASM. (?).

viridiventris Macquart, 1847 : 84 (68) (*Masicera*). Lectotype ♂ (by fixation of Townsend, 1939 : 15), TASMANIA (BMNH, London) [examined]. – TASM.*

Genus **TRITAXYS** Macquart

Tritaxys Macquart, 1847 : 81 (65). Type-species: *Tritaxys australis* Macquart, 1847, by monotypy.

Goniophana Brauer & Bergenstamm, 1889 : 97 (29). Type-species: *Gonia heterocera* Macquart, 1846, by original designation.

Gonanamastax Townsend, 1933 : 472. Type-species: *Blepharipeza goniaeformis* Macquart, 1846, by original designation.

Goniophania. Incorrect subsequent spelling of *Goniophana* Brauer & Bergenstamm (Malloch, 1929a : 113, attributed to Townsend in error).

australis Macquart, 1847 : 82 (66). Lectotype ♂ (by designation of Crosskey, 1971 : 292), TASMANIA (BMNH, London) [examined]. – TASM.

goniaeformis Macquart, 1846 : 285 (157) (*Blepharipeza*). Lectotype ♀ (by fixation of Townsend, 1932 : 50), TASMANIA (MNHN, Paris) [examined]. – TASM. (Possibly = *heterocera*).

heterocera Macquart, 1846 : 281 (153) (*Gonia*). Lectotype ♂ (by designation of Crosskey, 1971 : 269), 'TASMANIA' (MNHN, Paris) [examined]. – N.S.W., QLD, VICT., W.A., TASM. (?).

miliās Walker, 1849 : 799 (*Gonia*). Holotype ♀, NEW SOUTH WALES: Hunter River (BMNH, London) [examined]. – N.S.W., QLD.

miliās. Incorrect subsequent spelling of *miliās* Walker (Hardy, 1938 : 61).

scutellata Macquart, 1846 : 293 (165) (*Phorocera*). Holotype ♂, TASMANIA (MNHN, Paris) [examined]. **Comb. n.** – TASM.

Genus **UGIMEIGENIA** Townsend

Ugimeigenia Townsend, 1916d : 316. Type-species: *Ugimeigenia elzneri* Townsend, 1916, by original designation.

elzneri Townsend, 1916d : 316. Holotype ♂, QUEENSLAND: Banks Island (USNM, Washington) [examined]. – QLD.

* See Appendix, p. 209.

Genus **WINTHELLIA** Crosskey

Thyellina Mesnil, 1949a : 70. Type-species: *Thyellina brevicornis* Mesnil, 1949, by monotypy.

[Junior homonym of *Thyellina* Agassiz, 1838.]

Winthellia Crosskey, 1967a : 31. [Replacement name for *Thyellina* Mesnil.]

brevicornis Mesnil, 1949a : 70 (*Thyellina*). Holotype ♀, QUEENSLAND: Herberton (CNC, Ottawa, ex coll. Mesnil) [examined]. – QLD.

Genus **ZEBROMYIA** Malloch

Zebromyia Malloch, 1929 : 321. Type-species: *Zebromyia obesa* Malloch, 1929 [= *Phorocera ornata* Macquart, 1851], by original designation.

ornata Macquart, 1851 : 172 (199) (*Phorocera*). Lectotype ♂ (by designation of Crosskey, 1971 : 283), TASMANIA (MNHN, Paris) [examined]. – N.S.W., TASM.

obesa Malloch, 1929 : 321. Holotype ♂, TASMANIA (AM, Sydney) [examined].

Genus **ZYGOBOTHRIA** Mik

Zygobothria Mik, 1891 : 193. Type-species: *Sturmia atropivora* Robineau-Desvoidy, 1830, by original designation. (EUROPE).

ciliata Wulp, 1881 : 38 (*Meigenia*). Lectotype ♂ (by designation of Crosskey, 1967d : 104). SUMATRA: Alahan pandjang (RMNH, Leiden) [examined]. – W.A.; NEW GUINEA; widespread ORIENTAL and ETHIOPIAN REGIONS.

atropivora Robineau-Desvoidy, 1830 : 171 (*Sturmia*). Syntypes [♂ ♀], [FRANCE] (lost). – N.S.W., QLD; widespread in OLD WORLD.

Robineau-Desvoidy based this species on over eighty specimens that Serville reared from a chrysalis of *Sphinx atropos*. Both sexes are presumed to have been present in this number. None of the syntypes have been located or recognized since and all are presumed lost. (None exist in the remnants of Robineau-Desvoidy's collection in MNHN, Paris.)

Undetermined sp. – A.C.T.

Unplaced species of Sturmiini

castanea Hardy, 1938 : 63 (*Calopygidia*). Holotype ♂, TASMANIA: Mt Wellington (not located). – TASM.

dissimilis Malloch, 1930b : 343 (*Quadra*). Holotype ♂, NEW SOUTH WALES: Como (ANIC, Canberra) [examined]. – A.C.T., N.S.W.

This species is considered not to be congeneric with *ornata* Malloch, type-species of *Quadra*, but no generic assignment is possible at present.

Undescribed spp. (? genera) – various states.

Tribe **GONIINI** Robineau-Desvoidy

GONIDAE Robineau-Desvoidy, 1830 : 74. Type-genus: *Gonia* Meigen, 1803.

Genus **GONIOPHTHALMUS** Villeneuve

Goniophthalmus Villeneuve, 1910 : 145. Type-species: *Goniophthalmus simonyi* Villeneuve, 1910, by monotypy. (SOKOTRA).

australis Baranov, 1938b : 405 (*Dolichocolon australe*). Lectotype ♂ (by designation of Sabrosky & Crosskey, 1969 : 40), QUEENSLAND: Gympie (BMNH, London) [examined]. – N.S.W., QLD, W.A. (?).

rufescens Baranov, 1938b : 406 (*Dolichocolon*). Lectotype ♂ (by designation of Sabrosky & Crosskey, 1969 : 40), NEW SOUTH WALES: Yantabulla (BMNH, London) [examined]. – QLD.

Genus **PSEUDOGONIA** Brauer & Bergenstamm

Pseudogonia Brauer & Bergenstamm, 1889 : 100 (32). Type-species: *Gonia cinerascens* Rondani, 1859 [= *Tachina rufifrons* Wiedemann, 1830], by monotypy. (EUROPE).

Gaediogonia Townsend, 1927a : 71. Type-species: *Gaediogonia jacobsoni* Townsend, 1927 [= *Tachina rufifrons* Wiedemann, 1830], by original designation. (SUMATRA).

rufifrons Wiedemann, 1830 : 318 (*Tachina*). Holotype ♀, CHINA (UZM, Copenhagen) [examined]. – A.C.T.; NEW GUINEA; SOLOMONS; widespread ORIENTAL & southern PALAEARCTIC REGIONS; AFRICA.

cinerascens Rondani, 1859 : 34 (*Gonia*). Syntypes 3 ♂, 4 ♀ [unlabelled], ITALY (MZ, Florence). *jacobsoni* Townsend, 1927a : 71 (*Gaediogonia*). Holotype ♂, SUMATRA: Fort de Kock (ZM, Amsterdam) [examined].

(For other synonyms see Crosskey, 1966a : 678)

Tribe **ERYCIINI** Robineau-Desvoidy

ERYCINAE Robineau-Desvoidy, 1830 : 142. Type-genus: *Erycia* Robineau-Desvoidy, 1830.

Genus **APLOMYA** Robineau-Desvoidy

Aplomya Robineau-Desvoidy, 1830 : 184. Type-species: *Aplomya zonata* Robineau-Desvoidy, 1830 [= *Tachina confinis* Fallén, 1820], by subsequent designation of Robineau-Desvoidy (1863 : 459). (EUROPE).

Leiosia Wulp, 1893 : 185. Type-species: *Leiosia flavisquama* Wulp, 1893, by monotypy. (JAVA). **Syn. n.**

flavisquama Wulp, 1893 : 186 (*Leiosia*). Lectotype ♂ (by designation of Crosskey, 1969 : 104), JAVA (ZM, Amsterdam) [examined]. **Comb. n.** – QLD; JAVA, MALAYA, INDIA. Undetermined sp. – S.A.

Genus **APROTHECA** Macquart

Aprotheca Macquart, 1851 : 148 (175). Type-species: *Aprotheca rufipes* Macquart, 1851, by monotypy.

Parabrachelia Townsend, 1916c : 159. Type-species: *Masicera rufipes* Macquart, 1847 [= *Myobia tenuisetosa* Macquart, 1847], by original designation. **Syn. n.**

rufipes Macquart, 1851 : 149 (176). Lectotype ♂ (by fixation of Townsend, 1932 : 49), TASMANIA (MNHN, Paris) [examined]. – TASM. (Probably = *tenuisetosa*)

With the new assignment of *Masicera rufipes* Macquart, 1847, to *Aprotheca* the name *rufipes* Macquart, 1851, becomes a junior secondary homonym. No replacement name is proposed as future study will probably show that the types are conspecific, thus obviating the need for a new name.

tenuisetosa Macquart, 1847 : 90 (74) (*Myobia*). Holotype ♂, TASMANIA (BMNH, London) [examined]. **Comb. n.** – TASM.

rufipes Macquart, 1847 : 86 (70) (*Masicera*). Holotype ♂, TASMANIA (BMNH, London) [examined].

Genus **AUSTRONILEA** Crosskey

Austronilea Crosskey, 1967b : 32. Type-species: *Austronilea livida* Crosskey, 1967, by original designation.

livida Crosskey, 1967b : 33. Holotype ♂, AUSTRALIAN CAPITAL TERRITORY: Black Mt (ANIC, Canberra) [examined]. – A.C.T.

Genus **AUSTROPHRYNO** Townsend

Austrophryno Townsend, 1916c : 160. Type-species: *Tachina densa* Walker, 1852 [= *Exorista diversicolor* Macquart, 1847], by original designation.

Archimera Mesnil, 1954b : 371 (as subg. of *Platymya* Robineau-Desvoidy). Type-species: *Platymya (Archimera) oncoperae* Mesnil, 1954 [= *Exorista diversicolor* Macquart, 1847], by monotypy.

diversicolor Macquart, 1847 : 83 (67) (*Exorista*). Holotype ♂, TASMANIA (BMNH, London) [examined]. – A.C.T., N.S.W., TASM.

densa Walker, 1852 : 288 (*Tachina*). Holotype ♀, NEW SOUTH WALES (BMNH, London) [examined].

hebes Walker, 1852 : 289 (*Tachina*). Holotype ♂ [not ♀], TASMANIA (BMNH, London) [examined].

erythropus Walker, 1861c : 298 (*Nemoraea*). Holotype ♂, TASMANIA (BMNH, London) [examined].

oncoperae Mesnil, 1954b : 371 (*Platymya (Archimera)*). Holotype ♂, TASMANIA (CNC, Ottawa, ex coll. Mesnil) [examined].

Genus **BACTROMYIELLA** Mesnil

Bactromyiella Mesnil, 1952 : 239–240. Type-species: *Bactromyiella aureocincta* Mesnil, 1952 [= *Masicera ? ficta* Walker, 1861], by original designation. (FIJI).

ficta Walker, 1861b : 286 (*Masicera* ?). Holotype ♀ [head lost], INDONESIA: Moluccas, Batjan (publ. as 'Batchian') (BMNH, London) [examined]. – QLD; NEW GUINEA, FIJI, INDONESIA, INDIA.

semirufa Malloch, 1930b : 351 (*Sturmia*). Holotype ♂, QUEENSLAND: Kuranda (ANIC, Canberra) [examined].

aureocincta Mesnil, 1952 : 240 (*Bactromyiella*). Holotype ♂, FIJI: Nadala (BMNH, London) [examined].

Genus **CHLOROGASTROPSIS** Townsend

Chlorogastropsis Townsend, 1926c : 544. Type-species: *Chlorogaster rufipes* Schiner, 1868 [= *Tachina orga* Walker, 1849], by original designation. ('NEW ZEALAND' in error).

Eipogonoides Curran, 1938 : 195. Type-species: *Eipogonoides ruficornis* Curran, 1938 [= *Tachina orga* Walker, 1849], by original designation. **Syn. n.**

orga Walker, 1849 : 752 (*Tachina*). Lectotype ♂ (by designation of Crosskey, 1966b : 108), NEW SOUTH WALES: Sydney (BMNH, London) [examined]. **Comb. n.** – N.S.W., QLD.

rufipes Schiner, 1868 : 323 (*Chlorogaster*). Lectotype ♂ (by present designation), [AUSTRALIA: publ. as 'New Zealand' in error] (NM, Vienna) [examined]. **Syn. n.**

Published as from New Zealand, but correct provenance given as 'Neuholland' (=Australia) by Brauer & Bergenstamm (1889 : 97).

ruficornis Curran, 1938 : 196 (*Eipogonoides*). Holotype ♂, NEW SOUTH WALES (BMNH, London) [examined].

Genus **ERYTHROCERA** Robineau-Desvoidy

*Erythrocer*a Robineau-Desvoidy, 1848 : 436. Type-species: *Phryno nigripes* Robineau-Desvoidy 1830, by subsequent designation of Robineau-Desvoidy (1863 : 600). (EUROPE).

facialis Mesnil, 1952 : 253. Holotype ♂, QUEENSLAND: Herberton (DEI, Eberswalde) [examined]. – A.C.T., QLD.

Genus **METAPHRYNO** Crosskey

Metaphryno Crosskey, 1967b : 28. Type-species: *Metaphryno bella* Crosskey, 1967, by original designation.

bella Crosskey, 1967b : 29. Holotype ♂, NEW SOUTH WALES: 3 mls NW of Rules Point (ANIC, Canberra) [examined]. – N.S.W., VICT.

Genus **PHOROCEROSTOMA** Malloch

Phorocerosoma Malloch, 1929b : 327. Type-species: *Phorocerosoma setiventris* Malloch, 1929, by original designation. [Junior homonym of *Phorocerosoma* Townsend, 1927.]

Phorocerostoma Malloch, 1930b : 326. [Replacement name for *Phorocerosoma* Malloch.]

setiventre Malloch, 1929b : 327 (*Phorocerosoma setiventris*). Holotype ♂, QUEENSLAND: Macpherson Range, National Park (AM, Sydney) [examined]. – N.S.W., QLD.

Genus **PSEUDALSOMYIA** Mesnil

Pseudalsomyia Mesnil, 1968 : 178. Type-species: *Pseudalsomyia piligena* Mesnil, 1968, by original designation. (PAKISTAN).

pilifacies Mesnil, 1968 : 180. Holotype ♂, NEW SOUTH WALES: Lisarow (BMNH, London) [examined]. – N.S.W.

Genus **TERETROPHORA** Macquart

Teretrophora Macquart, 1851 : 174 (201). Type-species: *Teretrophora fasciata* Macquart, 1851, by monotypy.

fasciata Macquart, 1851 : 175 (202). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. – N.S.W., TASM. (?).

Undescribed sp. – N.S.W.

Unplaced species of Eryciini

crassiseta Baranov, 1938b : 409 (*Bactromyia*). Holotype ♀, QUEENSLAND: Biloela (BMNH, London) [examined]. – QLD.

quadrissetosa Curran, 1938 : 204 (*Zenillia*). Holotype ♀, QUEENSLAND: Palm Is. (SPHTM, Sydney) [examined]. – QLD.

varipes Macquart, 1846 : 291 (163) (*Masicera*). Holotype ♂ [labelled 'Exorista varipes'], TASMANIA (MNHN, Paris) [examined]. – TASM.

This species, referred to as *Phryno varipes* by Robineau-Desvoidy (1863 : 543), is apparently near *Austrophryno diversicolor* (Macquart) but differs by having the parafacials entirely bare and is left generically unassigned until it can be studied more fully.

Undescribed genera & spp. – N.S.W., S.A., TASM.

Unplaced species of Tachinidae

armiceps Malloch, 1930b : 336 (*Voriella*). Holotype ♀, WESTERN AUSTRALIA: Eradu (ANIC, Canberra) [examined]. – W.A.

calliphon Walker, 1849 : 777 (*Tachina*). Holotype ♂ [with puparium], 'Picton' (BMNH, London) [examined].

Austen (1907 : 339) noted that the type bears a label 'Picton' and that it is presumably therefore from 'either New South Wales or Canada'. The type also bears (as Austen did not note) a BMNH accession label reading '47 109' (i.e. the 109th collection of insects registered as received by BMNH in the year 1847). Examination of the register shows that this collection consisted of many miscellaneous insects from 'W. Australia', and suggests that *calliphon* must have an Australian provenance; pending other evidence (from later-collected material of the same species which will help to pinpoint the locality) the provenance of the holotype is accepted as Picton, Western Australia (though Picton, New South Wales is an alternative possibility). Up to now the holotype has remained unique; no specimens have been found that associate with it.

despicienda Walker, 1861c : 306 (*Tachina*). Holotype ♀ [bad condition], NEW SOUTH WALES [?] (BMNH, London) [examined].

This species was published as from New South Wales and the holotype bears an old ink label 'NSW'. No Australian specimens have been seen that associate with the holotype, which may not have had an Australian provenance. From the surviving characters of the holotype it appears to belong near the genus *Mauritiodoria* Townsend from Mauritius and might be the female of *Mauritiodoria spinicosta* (Thomson).

diversa Walker, 1852 : 262 (*Ocyptera* ?). Holotype ♀, 'TASMANIA' (lost).

This name remains a *nomen dubium*. The holotype is lost, and evidence that it originated from Tasmania is inconclusive (there are doubts about several of the provenances cited by Walker in the 1852 work).

hyalipennis Macquart, 1855 : 122 (102) (*Phorocera*). Type(s) ♂, SOUTH AUSTRALIA: Adelaide (lost). – S.A. (*Nomen dubium*).

As the type-material is lost this name remains completely enigmatic; it is a junior primary homonym of *Phorocera hyalipennis* Macquart, 1851, from Java.

inconspicua Malloch, 1930b : 336 (*Voriella*). Holotype ♀, NEW SOUTH WALES: Sydney (SPHTM, Sydney) [examined]. – N.S.W.

lateralis Macquart, 1851 : 176 (203) (*Degeeria*). Holotype ♂, TASMANIA [publ. as 'Oceania'] (MNHN, Paris) [examined]. – TASM. (*Nomen dubium*).

The holotype of this species is in appalling condition, being wholly coated with a brittle deposit and completely concealed in mould. The name therefore remains enigmatic; it is a junior primary homonym of *Degeeria lateralis* Macquart, 1848, from North America.

melas Bigot, 1889 : 256 (*Exorista*). Holotype ♀, TASMANIA (lost). (*Nomen dubium*).

The holotype of this species was not in Bigot's collection when that collection came to the BMNH and has not been seen since the time of description. Bigot added the word 'Detrita' after his Latin description, and the holotype was presumably therefore in very bad condition when described. The name remains enigmatic.

mucrocornis Macquart, 1851 : 174 (201) (*Phorocera*). Holotype ♀, 'TASMANIA' (MNHN, Paris) [examined]. – TASM. (?). (? Blondeliini or Exoristini).

The holotype of this nominal species is in such bad condition that few features can be made out. It appears, however, to be fairly certainly either a blondeliine or an exoristine).

SUMMARY OF NOMENCLATURAL CHANGES ESTABLISHED
IN THE CATALOGUE

The nomenclatural changes established in the foregoing catalogue are summarized below in their appropriate categories. The order is alphabetical and in the tables of synonyms the invalid junior names are cited first.

(a) New synonymy in genus-group names

Austroedexia Malloch, **syn. n.** of *Senostoma* Macquart.
Chlorogastrina Crosskey, **syn. n.** of *Tasmaniomyia* Townsend.
Dicephalomyia Malloch, **syn. n.** of *Senometopia* Macquart.
Eipogonoides Curran, **syn. n.** of *Chlorogastropsis* Townsend.
Eocarcelia Townsend, **syn. n.** of *Senometopia* Macquart.
Eocarciopsiopsis Townsend, **syn. n.** of *Senometopia* Macquart.
Lasiocalypter Malloch, **syn. n.** of *Senostoma* Macquart.
Lasiocalyptrina Malloch, **syn. n.** of *Senostoma* Macquart.
Leiosia Wulp, **syn. n.** of *Aplomya* Robineau-Desvoidy.
Parabrachelia Townsend, **syn. n.** of *Aprotheca* Macquart.
Rhynchioredexia Bigot, **syn. n.** of *Senostoma* Macquart.
Ruya Paramonov, **syn. n.** of *Rutilotrix* Townsend.
Schizactiana Curran, **syn. n.** of *Ceromya* Robineau-Desvoidy.
Schizoceromyia Townsend, **syn. n.** of *Ceromya* Robineau-Desvoidy.

(b) New synonymy in species-group names

Besserioides sexualis Curran, **syn. n.** of *Besserioides varicolor* (Curran).
Chlorogaster rufipes Schiner, **syn. n.** of *Chlorogastropsis orga* (Walker).
Exorista lata Macquart, **syn. n.** of *Winthemia lateralis* (Macquart).
Exorista marginata Macquart, **syn. n.** of *Winthemia lateralis* (Macquart).
Exorista rufomaculata Macquart, **syn. n.** of *Phorocerosoma cilipes* (Macquart).
Heterometopia rufipalpis Macquart, **syn. n.** of *Heterometopia argentea* Macquart.
Linnaemyia nigripalpus Tryon, **syn. n.** of *Linnaemyia concavicornis* (Macquart).
Machrocloria calliphorosoma Malloch, **syn. n.** of *Machrocloria nitidiventris* (Macquart).
Macrocloria calliphorosoma v. *rufipes* Malloch, **syn. n.** of *Macrocloria nitidiventris* (Macquart).
Masicera consanguinea Macquart, **syn. n.** of *Exorista flaviceps* Macquart.
Microtropeza fallax Hardy, **syn. n.** of *Microtropesa violacescens* Enderlein.
Nemoraea brevisetosa Macquart, **syn. n.** of *Winthemia lateralis* (Macquart).
Ocyptera flavifrons Macquart, **syn. n.** of *Cylindromyia bimacula* (Walker).
Omalogaster limbinevris [sic] Macquart, **syn. n.** of *Heterometopia argentea* Macquart.
Omalogaster nitidus Macquart, **syn. n.** of *Heterometopia argentea* Macquart.
Phorocera acutangulata Macquart, **syn. n.** of *Paropsivora graciliseta* (Macquart).
Phorocera maculata Macquart, **syn. n.** of *Blepharella lateralis* Macquart.
Phorocera subpubescens Macquart, **syn. n.** of *Polychaeta nigra* Macquart.
Prosenia albifrons Malloch, **syn. n.** of *Prosenia conica* Guérin-Méneville.
Prosenia indecisa Malloch, **syn. n.** of *Prosenia macropus* Thomson.
Prosenia parva Malloch, **syn. n.** of *Prosenia dorsalis* Macquart.
Senostoma punctum Walker, **syn. n.** of *Senostoma appendiculatum* (Macquart).
Tachina australis Walker, **syn. n.** of *Blepharipa fulviventris* (Macquart).
Winthemia albiceps Malloch, **syn. n.** of *Winthemia lateralis* (Macquart).
Winthemia diversa Malloch, **syn. n.** of *Winthemia neowinthemioides* (Townsend).
Zosteromyia longicornis Hardy, **syn. n.** of *Zosteromeigenia mima* Townsend.

(c) New combinations*

[Note: The new combinations shown are only those that are considered taxonomically valid.
 The list excludes combinations implied by new synonymy.]

Allophora (*Allophorella*) *chrysis* (Malloch) **comb. n.**
Allophora (*Allophorella*) *costalis* (Malloch) **comb. n.**

* See also Appendix, p. 209.

- Alophora (Alophorella) discalis* (Malloch) **comb. n.**
Alophora (Hyalomya) normalis (Curran) **comb. n.**
Alophora (Mormonomyia) basalis (Malloch) **comb. n.**
Alophora (Mormonomyia) hyalis (Malloch) **comb. n.**
Alophora (Mormonomyia) lativentris (Malloch) **comb. n.**
Alophora (Mormonomyia) lepidofera (Malloch) **comb. n.**
Alophora (Mormonomyia) nigrihirta (Malloch) **comb. n.**
Alophora (Mormonomyia) sensua (Curran) **comb. n.**
Alophora (subg. indet.) *hippobosca* (Paramonov) **comb. n.**
Alophora (subg. indet.) *nigrisquama* (Malloch) **comb. n.**
Anagonia anguliventris (Malloch) **comb. n.**
Anagonia grisea (Malloch) **comb. n.**
Anagonia lasiophthalma (Malloch) **comb. n.**
Anagonia lateralis (Macquart) **comb. n.**
Anagonia major (Malloch) **comb. n.**
Anagonia opaca (Malloch) **comb. n.**
Anagonia scutellata (Malloch) **comb. n.**
Apatemyia flavipes (Macquart) **comb. n.**
Apatemyia rufiventris (Macquart) **comb. n.**
Aplomya flavisquama (Wulp) **comb. n.**
Aprotheca tenuisetosa (Macquart) **comb. n.**
Argyrothelaira melancholica (Mesnil) **comb. n.**
Blepharipa auripilis (Robineau-Desvoidy) **comb. n.**
Blepharipa coesiofasciata (Macquart) **comb. n.**
Blepharipa fulviventris (Macquart) **comb. n.**
Ceracia armata (Malloch) **comb. n.**
Ceracia fergusoni (Malloch) **comb. n.**
Ceromya fergusoni (Bezzi) **comb. n.**
Ceromya valida (Curran) **comb. n.**
Chaetophthalmus ruficeps (Macquart) **comb. n.**
Chlorogastropsis orga (Walker) **comb. n.**
Cuphocera pilifacies (Macquart) **comb. n.**
Eozenillia remota (Walker) **comb. n.**
Ethilla translucens (Macquart) **comb. n.**
Gerocyptera tristis (Bigot) **comb. n.**
Hillomyia polita (Malloch) **comb. n.**
Linnaemya concavicornis (Macquart) **comb. n.**
Macrochlovia nitidiventris (Macquart) **comb. n.**
Medinodexia morgani (Hardy) **comb. n.**
Paropsivora australis (Macquart) **comb. n.**
Paropsivora graciliseta (Macquart) **comb. n.**
Paropsivora tessellata (Macquart) **comb. n.**
Peribaea argentifrons (Malloch) **comb. n.**
Peribaea baldwini (Malloch) **comb. n.**
Peribaea orbata (Wiedemann) **comb. n.**
Peribaea plebeia (Malloch) **comb. n.**
Phorocerosoma cilipes (Macquart) **comb. n.**
Pilimyia lateralis (Macquart) **comb. n.**
Rutilotrixa diversa (Paramonov) **comb. n.**
Rutilotrixa monstrosa (Paramonov) **comb. n.**
Rutilotrixa westralica (Paramonov) **comb. n.**
Senostoma apicale (Curran) **comb. n.**
Senostoma appendiculatum (Macquart) **comb. n.**
Senostoma atripes (Malloch) **comb. n.**

Senostoma basale (Curran) **comb. n.**
Senostoma brevipalpe (Macquart) **comb. n.**
Senostoma brevipalpe (Rondani) **comb. n.** (preocc. *brevipalpe* Macquart, see p. 117).
Senostoma commune (Malloch) **comb. n.**
Senostoma flavohirtum (Malloch) **comb. n.**
Senostoma hirticauda (Malloch) **comb. n.**
Senostoma hyria (Walker) **comb. n.**
Senostoma mixtum (Malloch) **comb. n.**
Senostoma modestum (Malloch) **comb. n.**
Senostoma nigrihirtum (Malloch) **comb. n.**
Senostoma notatum (Walker) **comb. n.**
Senostoma pallidihirtum (Malloch) **comb. n.**
Senostoma punctipenne (Macquart) **comb. n.**
Senostoma rubricarinatum (Macquart) **comb. n.**
Senostoma setigerum (Malloch) **comb. n.**
Senostoma setiventris (Malloch) **comb. n.**
Senostoma taylori (Curran) **comb. n.**
Senostoma tessellatum (Macquart) **comb. n.**
Senostoma testaceicorne (Macquart) **comb. n.**
Senostoma unipunctum (Malloch) **comb. n.**
Sipholeskia certima (Curran) **comb. n.**
Tasmaniomyia tasmanensis (Macquart) **comb. n.**
Trigonospila braueri (Townsend) **comb. n.**
Trigonospila brevifacies (Hardy) **comb. n.**
Trigonospila fasciata (Hardy) **comb. n.**
Tritaxys scutellata (Macquart) **comb. n.**

(d) New names for junior homonyms

Hillomyia Crosskey **nom. n.**, for *Hillia* Malloch (preoccupied by *Hillia* Grote).
macquarti Crosskey **nom. n.**, for *Masicera auriceps* Macquart, 1851 (preoccupied by *Masicera auriceps* Macquart, 1843).

LECTOTYPE DESIGNATIONS

New lectotype designations are made below for twelve nominal species occurring in Australia (ten described from Australia and two with an extra-Australian original provenance). Each lectotype and available paralectotype has been appropriately labelled.

Ceromasia sphenophori Villeneuve, 1911 : 81-82.

Described from one ♀ and three ♂ syntypes sent to Villeneuve by de Meijere for study. LECTOTYPE ♂, NEW GUINEA: Papua [Laloki River area near Port Moresby], vii-viii. 1909 (*F. Muir*) (in Zoölogisch Museum, Amsterdam). Paralectotype ♂, NEW GUINEA [probably same provenance as lectotype] (CNC, Ottawa, ex Villeneuve-Mesnil coll.).

The lectotype bears labels in Villeneuve's writing that read 'Type' and 'Ceromasia sphenophori ♂ Villen', and the paralectotype bears a Villeneuve label reading 'Ceromasia sphenophori type ♂ Villen'.

The ZM, Amsterdam, collection contains two ♀ specimens of *C. sphenophori* from Ambon (=Amboyna, Moluccas) each with a pencilled label, one reading 'Ambon' and the other 'Ambon vi vii 08'. It is known that Muir collected in Amboyna and obtained *sphenophori* there in the year prior to that in which he obtained the species at his Laloki river camp in Papua, and the year date 08 (=1908) fits with this. It is possible that one of the Amboyna females is an original syntype, even though Villeneuve mentioned only New Guinea in the description. Good evidence is lacking, however, and the Amboyna specimens are considered not to have any type-status (neither bears a label by Villeneuve).

***Chlorogaster rufipes* Schiner, 1868 : 323.**

Described from one ♀ and two ♂ syntypes. LECTOTYPE ♂, AUSTRALIA (in Naturhistorisches Museum, Vienna). Paralectotype ♀, data as lectotype (also in NM, Vienna). The third (♂) syntype has not been seen. The lectotype bears a label in purple ink reading 'rufipes Type Br. Bgst.', another label reading 'N. Holland Alte Sammlung' and a third label reading 'rufipes det. B.B.' (the specific name in ink, remainder in print); the paralectotype has identical labels.

The provenance was published originally as 'Neuseeland' but this was corrected to 'New Holland' by Brauer & Bergenstamm (1889 : 97).

***Dexia aditha* Walker, 1848 : 854.**

The type-material of this nominal species was cited as 'Holotype' in the recent revision of the Rutiliini (Crosskey, 1973). Whilst that paper was in press, however, it was discovered that a second original specimen had been inadvertently incorporated into the Australian National Insect Collection (having been loaned to the late Dr Paramonov several years ago and not returned to British Museum (Natural History)). It is now certain that the original material consisted of two syntypes, and the specimen earlier referred to as 'holotype' is here newly designated as lectotype.

LECTOTYPE ♂, AUSTRALIA: Western Australia, Swan River (*Richardson*) (in British Museum (Natural History), London). Paralectotype ♂, same data as lectotype (also in BMNH).

Lectotype and paralectotype bear identical labels reading as follows: circular white label with '43 14' on one side and 'Swan River' on the reverse side in slightly faded black ink; pencilled label 'Swan R. W. Australia. Dr. Richardson. 43.14.' in Austen's writing. (The figures '43 14' refer to the 14th collection of insects incorporated into the BMNH collection in 1843.)

***Microtopeza* [sic] *violacescens* Enderlein, 1937 : 441.**

Described from three ♂ and two ♀ syntypes. LECTOTYPE ♂, AUSTRALIA: Queensland, Herberton, 3700 ft, xii. 1910 (Dodd) (in Deutsches Entomologisches

Institut, Eberswalde). Paralectotypes: 2 ♂, 2 ♀, same data as lectotype (♂ & ♀ in DEI, Eberswalde, and ♂ & ♀ in MNHU, Berlin).

Each type-specimen has a printed label 'Herberton Dodd XII.1910 3700 Ft.' and Enderlein's name label. The generic name is mis-spelt 'Microtopeza' on each name label as well as in the original publication.

***Palpostoma aldrichi* Hardy, 1938 : 57 (= *testacea* sensu Aldrich).**

Aldrich (1922) described a species of *Palpostoma* that he considered to be *P. testaceum* Robineau-Desvoidy from a female and five male specimens from Cairns in northern Queensland. Hardy (1938) considered that Aldrich's species could not be the true *P. testaceum*, as Robineau-Desvoidy would not have had the same species. This supposition of Hardy is the merest conjecture, unsupported by any real evidence (as Robineau-Desvoidy's original material of *testaceum* is lost and it is still not known, in the unsatisfactory taxonomic state of *Palpostoma*, whether the same species may occur in north Queensland as are found in New South Wales – the most probable provenance of Robineau-Desvoidy's material); nevertheless, Hardy's name *P. aldrichi* that he published for Aldrich's supposedly misidentified *testaceum* is available in nomenclature. The name is not accompanied by any description, but the reference is given to Aldrich's (1922) description under the name *testacea* [sic] and the name *aldrichi* is therefore available under Article 13 (a) (ii) of the ICZN.

The type-material of *aldrichi* is comprised of the six specimens cited by Aldrich. Aldrich stated that three of these (♂) had been returned to the collector (Illingworth), and the others (two ♂, one ♀) retained for the USNM collection. The specimens returned to Australia have not been located (though possibly still present in a collection in Brisbane) but the others are in Washington, and a lectotype is here designated from them.

LECTOTYPE ♂, AUSTRALIA: Queensland, Cairns, 1919 (*J. F. Illingworth*) (in United States National Museum, Washington D.C.). Paralectotype ♂, same data as lectotype (label lacking collector's name) (USNM); paralectotype ♀, Queensland, Babinda, 1919 (*J. F. Illingworth*) (USNM).

The lectotype is labelled 'Cairns N. Q. 19' and 'J. F. Illingworth Coll. Ex. Window' and bears Aldrich's identification label as '*testacea*'. There are discrepancies between the labelling of the paralectotypes and Aldrich's published data, but it seems probable that Aldrich was citing data only from the specimen that he retained and labelled (i.e. the lectotype) and that the two specimens here treated as paralectotypes that he also retained (a ♂ and a ♀) are part of the type-series in spite of the discrepancies; the female is labelled as from Babinda (not Cairns) and the male is labelled as collected by A. P. Dodd (not J. F. Illingworth).

***Senostoma ? punctum* Walker, 1858 : 205.**

Described from 'Australia and New South Wales', from which statement it is clear that there were at least two original syntypes. Two specimens are in

BMNH collection, one from New South Wales and the other without locality label; these are considered to be both original syntypes as both came from Saunders' collection (they are males, whereas Walker stated 'Female', but errors of sexing are frequent in Walker's work). LECTOTYPE ♂, AUSTRALIA: New South Wales (in British Museum (Natural History), London). Paralectotype ♂, AUSTRALIA presumed (also in BMNH, London).

***Sisyropa cinerea* Brauer & Bergenstamm, 1891 : 346 (42).**

Described from both sexes but without statement of the number of specimens. Existing material consists of one ♂ and one ♀ syntype (mis-associated with each other). LECTOTYPE ♂, AUSTRALIA: Queensland, Rockhampton, 1868 (*Thorey*) (in Naturhistorisches Museum, Vienna). (Only the Rockhampton locality is mentioned in the original description.)

The lectotype bears a label reading 'Thorey 1868 Rock-hampton' (the word Thorey and figures 186 in print, remainder in black ink), a label 'cinerea det. B. B' (handwritten in black ink except for the letters 'det.') and a label in purple ink reading 'Blepharipoda Sisyropa'. The paralectotype is similarly labelled except that the words 'Cap York' are given for locality on the first label and there is no label in purple ink.

Lectotype and paralectotype are mis-associated, the former being a *Carcelia* and the latter a winthemiine (*Nemorilla* sp.). Mesnil (1950b : 9) referred to 'le *Carcelia* (*Eucarcelia*) *cinerea* B. B. dont nous avons vu le type', but this statement does not restrict the name to a single recognizable specimen and therefore does not constitute a valid lectotype fixation. Present designation of the ♂ specimen as lectotype maintains the sense of the name used by Mesnil. Here it should be noted that Crosskey (1966b : 109) cited his assignment of *cinerea* to *Carcelia* as a new combination; this was due to an oversight, Mesnil's (1950b) earlier assignment to *Carcelia* in a work on African Carceliini having been overlooked.

***Tachina bura* Walker, 1849 : 760.**

Described from two specimens, one presented to BMNH by Rev. T. Ewing from Van Diemen's Land, and the other from New Holland and in the Rev. J. Wenham's collection. Only the specimen from Tasmania has been found, which is here designated as lectotype. LECTOTYPE ♂, AUSTRALIA: Tasmania (in British Museum (Natural History), London).

The lectotype bears a circular white accession label with the ink figures '46 81' and a pencilled label in Austen's writing that reads 'Tasmania. Rev. J. Ewing. 46. 81'.

***Tachina ruralis* Fallén, 1810 : 265.**

Described from an unstated number of specimens of both sexes from 'Esperöd i Skåne'. The Fallén collection at Stockholm contains seven specimens standing

under the name *ruralis*, none of them with data labels; one is ♂ and six are ♀. In the absence of contrary evidence all seven specimens are accepted as syntypes. The ♂ syntype is the only specimen that belongs to the well-known and nearly cosmopolitan species that has long been known as *Voria ruralis* (Fallén) and this specimen is therefore designated as lectotype. LECTOTYPE ♂, SWEDEN: Skäne, Esperöd (in Naturhistoriska Riksmuseum, Stockholm). Paralectotypes 7 ♀, data presumed as lectotype (also in NR, Stockholm).

The lectotype bears a very old label reading (in faded ink) 'Tachina ruralis ♂ Fallén', and one of the ♀ paralectotypes bears an identical label. Other paralectotypes are unlabelled.

All six ♀ paralectotypes are mis-associated with the ♂ lectotype. They belong to a species of *Exorista*, most of them probably being *Exorista rustica* (Fallén, 1810). This species was described immediately before *ruralis* in Fallén (1810 : 264), and Fallén noted in the description of *ruralis* its similarity to *rustica*. There may at some time have been a confusion of the specimens of *rustica* and *ruralis*, but the present designation of the ♂ syntype as lectotype maintains the longstanding usage of the name *ruralis* for a species of *Voria* Robineau-Desvoidy and not of *Exorista* Meigen.

***Zosteromyia brevifacies* Hardy, 1934 : 36.**

Described from one ♀ syntype from Tooloom (N.S.W.) and a ♀ and two ♂ syntypes from Mt. Wellington (Tasmania). The Tooloom specimen is designated as lectotype; the other syntypes have not been located. LECTOTYPE ♀, AUSTRALIA: New South Wales, Tooloom, 29.i.1926 (in Queensland Museum, Brisbane: registered No. T.7127).

The lectotype bears an ink label reading 'Tooloom NSW 29.1.26' and a name label in Hardy's writing reading 'Zosteromyia brevifacies Hardy PARATYPE'. (As no holotype was designed in the original publication the specimen is an original syntype, not a paratype.)

***Zosteromyia longicornis* Hardy, 1934 : 36.**

Described from three ♂ syntypes from Brisbane and Mt Glorious. LECTOTYPE ♂, AUSTRALIA: Queensland, Mt Glorious, 25.iv.1930 (in University of Queensland, Brisbane). Paralectotype ♂, same data as lectotype (in BMNH, London). The third syntype has not been located.

The lectotype bears an ink label reading 'Mt Glorious 25.4.30' and a name label in Hardy's writing reading 'Zosteromyia longicornis Hardy PARATYPE'. (As no holotype was designated in the original publication the specimen is an original syntype, not a paratype.)

***Zosteromyia morgani* Hardy, 1934 : 37.**

Described from four ♂ specimens (syntypes) without a designated holotype. LECTOTYPE ♂, AUSTRALIA: New South Wales, Biniguy [publ. as 'Binniguy'],

22.ii.1930 (*W. L. Morgan*) (in New South Wales Department of Agriculture, Rydalmere). Paralectotype: 1 ♂, same data as lectotype (in NSWDA, Rydalmere); 1 ♂, New South Wales, Narara [publ. as 'Worara'], 11.xi.1931 [publ. as '30'] (*W. L. Morgan*) (NSWDA, Rydalmere).

The lectotype bears an ink label reading 'Bred from *Aulacophora hilaris* adult coll. Binniguy 22.2.30. *W. L. Morgan*' and the condition is fair except for some collapse of the eyes and scutum and loss of apical half of left wing. One paralectotype is labelled exactly as the lectotype and has its associated puparium (the abdomen is gummed separately to the card mount); the other paralectotype is labelled in ink 'Bred from *Aulacophora hilaris* adult coll. Narara 11.11.31 *W. L. Morgan*'.

The lectotype and paralectotypes each bear a name label in Hardy's writing that reads '*Zosteromyia morgani* Hardy PARATYPE' and a printed label 'Department of Agriculture, Sydney, N.S.W., Australia'.

SUMMARY OF AUSTRALIAN NOMINAL SPECIES FOR WHICH TYPES ARE LOST OR MISSING

The foregoing catalogue contains the names of 487 nominal species-group taxa described from Australia (up to 1973). Primary types are known to exist for 458 of these taxa, but are lost or have not been located for the remaining 29 taxa. The lost or missing types fall into two categories that are differentiated in the lists of missing types that follow. The first category is that of types that can confidently be asserted to be lost: in these cases (all of them nominal species described by nineteenth-century authors) the types have never been found by later workers and no specimens that could be the types have been found during personal searches of likely depositories carried out for the preparation of this catalogue. The second category is that of types which have not been found during the preparation of this work but which may still exist: in these cases (mainly nominal species described by twentieth-century authors) it is probable that types still exist and will eventually be found in some small collection or unexpected place (those of the two species described by Rondani, for example, may well be in a small Italian museum but appear certainly not to be in Florence, Naples, or Genoa). The distinction here made between 'lost' and 'missing' types is emphasized to assist future revisionary work: it is considered that later workers may safely assume that the types listed as 'lost' are truly lost or destroyed and will never be found; on the other hand, searches will need to be made for the types listed as 'missing' whenever the relevant groups are studied in detail. The lists are alphabetical under the original binomina.

(a) Nominal species of which the types are lost

Carcelia tasmanica Robineau-Desvoidy

Dexia hyria Walker

Exorista melas Bigot

Micropalpus bicolor Macquart.
Musca sinuata Donovan
Ocyptera ? *diversa* Walker
Omalogaster nitidus Macquart
Palpostoma testacea Robineau-Desvoidy
Phorocera hyalipennis Macquart (1855)
Rutilia australasia Gray
Rutilia fulvipes Guérin-Méneville
Rutilia vidua Guérin-Méneville
Verreauxia auripilis Robineau-Desvoidy

(b) Nominal species of which types are missing

Calopygidia castanea Hardy
Cuphocera pilosa Malloch
Dexia brevipalpis Rondani
Euthera skusei Bezzi
Exorista trichopareia Schiner
Linnaemyia nigripalpus Tryon
Microtropesa skusei Bergroth
Microtropeza fallax Hardy
Prosenia albifrons Malloch
Prosenia indecisa Malloch
Prosenia varia Curran
Rhinomyobia australis Brauer & Bergenstamm
Rutilia spinolae Rondani
Schizotachina fergusonii Bezzi
Zosteromyia fasciata Hardy
Zosteromyia minor Hardy

PART III—A HOST CATALOGUE FOR THE AUSTRALIAN TACHINIDAE

INTRODUCTION

The hosts of very nearly all true Tachinidae (from which I exclude the Rhinophoridae, a group sometimes treated as tachinids) are other insects, but centipede hosts are known. As a rule the larval or pupal stages of the hosts are parasitized, especially the caterpillars of Lepidoptera and Hymenoptera Symphyta and the soil- or wood-inhabiting grubs of Coleoptera, but when hemimetabolous insects are the hosts it is usually the adult stage that is attacked; a few forms parasitize adult beetles. The host-relations of the Australian Tachinidae conform in their essentials with the general picture of tachinid parasitism, and there are no insect orders providing hosts in Australia that do not also provide hosts in other zoogeographical regions. In Australia eight insect orders are so far known

positively to provide hosts, and these same orders provide the hosts for the overwhelming majority of world forms: the Lepidoptera and Coleoptera, as elsewhere, provide the greatest number of different host species, and the Orthoptera, Hemiptera-Heteroptera and Hymenoptera are regularly parasitized by particular groups of Australian tachinids; a few species of stick-insects (Phasmatodea) and mantids (Mantodea) also provide hosts. The rather well developed fauna of Embioptera in Australia is not known to have tachinid parasites, but may be found to do so (as the tachinid genus *Rossimylops* Mesnil is parasitic on an embiopteran in South Africa). There is one remarkable record of an Australian tachinid parasitizing adult Tabanidae (Diptera) (Spratt & Wolf, 1972).

Tachinids are presumed to play an important role in the natural regulation of the numbers of their hosts, but this is difficult to quantify. In Australia many of the economically important insect pests are attacked by tachinid parasites, and some parasite species are regularly reared in numbers from their host pest species. Particular tachinid groups may be confined to particular host groups (e.g. the Phasiinae only attack Hemiptera and the Acemyini only attack Orthoptera) but true host-specificity in the sense of a single species of parasite confined to a single host-species is apparently rare in the Australian fauna (and the apparent instances where host-specificity occurs are probably mainly due to insufficient knowledge). Certainly several of the main injurious pests are attacked by several species of tachinid, and many of the tachinids attacking these pests also have other hosts (as is evident from the accompanying parasite-host and host-parasite lists).

The range of economically important Australian insect pests that are attacked by Tachinidae is very diverse, and includes pests of agricultural crops (sugar-cane, cotton, maize, cucurbits) and many serious defoliators of forest timbers. Some of the most important pests, with their parasite-groups, are: the cotton bollworm (*Heliothis armigera*), the army-worm (*Persectania*, *Pseudaletia*, *Spodoptera* spp.) and cutworm (*Agrotis*) pests of cotton and other crops that are attacked by many species of Tachininae and Goniinae; the sugar-cane borer weevil (*Rhabdoscelus obscurus*) attacked by *Lixophaga sphenophori*; the white-grub larvae of melolonthine beetles, especially the sugar-cane white-grub (*Dermolepida albohirta*) of the Queensland canefields, attacked by species of *Palpostoma* and of Rutiliini; the introduced scarabaeid beetle *Heteronychus arator*, a pest of maize in New South Wales, that is attacked by species of *Palpostoma*; the chrysomelid beetle *Aulacophora hilaris* that destroys the foliage and flowers of cucurbitaceous crops, attacked by a species of Blondeliini; the cotton-stainer bug (*Dysdercus sidae*) of Queensland, attacked by species of Phasiinae; the pergid sawfly defoliators of *Eucalyptus*, attacked by several species of the *Anagonia-Froggattimyia* complex (Blondeliini); the chrysomelid beetle *Paropsis atomaria*, a pest of *Eucalyptus*, attacked by several species of Blondeliini; and the stick-insect *Didymuria violescens*, a serious defoliator of *Eucalyptus* in New South Wales, that is attacked by an undescribed tachinid of very uncertain systematic position.

Despite the diversity of economically important insect pests, and the extent of work undertaken on them by Australian departments of agriculture and

forestry, there has not up to now been any published host-list for the Australian Tachinidae. The only published host records available have been scattered in original tachinid descriptions or cited haphazardly in departmental reports or in accounts of particular pests, and these were the main sources for the relatively few entries in W. R. Thompson's *A Catalogue of the Parasites and Predators of Insect Pests* concerned with Australian Tachinidae. Many of the earlier records existing in these various publications cannot be relied upon, either because of changes in the nomenclature of the hosts and parasites or because of misidentification, especially of the tachinids, and for some time an up-to-date host catalogue for the Australian Tachinidae has been needed that is based so far as possible on reliably named hosts and parasites and on the latest information available.

The host catalogue here presented may not be exhaustive, as there are probably some tachinid specimens scattered in Australian collections that were reared from known hosts but have not been available during the present study. Nevertheless the lists of hosts and parasites are sufficiently comprehensive to form useful basic lists that can be gradually augmented as more evidence on the host-relations is acquired.

A major difficulty in compiling dependable host-parasite lists is the unreliability of the identifications. As a rule, material of the hosts is not kept in collections with the reared Tachinidae so that confirmation of identity of both host and parasite is difficult or impossible. In general, however, it is likely that the hosts will have been correctly identified, since they are commonly well known pests and often are conspicuous Lepidoptera whose specific identities are not in doubt (even if the lepidopterists are in dispute about the generic placements). On the other hand identities of tachinid parasites are likely to be wrong unless they have been recently checked by a specialist on the group (and in some difficult groups of tachinids even this is no guarantee for every specimen). In preparing the accompanying parasite-host and host-parasite lists it has been assumed that the hosts have been correctly identified, but the tachinids have only been recorded when: (1) they have been personally identified, (2) when the host record is from the original type-material of the tachinid parasite, or (3) when published records, other than the original descriptions, are undoubtedly based on correctly identified Tachinidae. The last circumstance is relatively infrequent, and most host records in the literature have been discounted because the identities cited for the tachinid parasites are either wrong or suspect (for example, most of G. H. Hardy's identifications of Australian Tachinidae were based on guesswork from the literature and in consequence were often in error: hence his published host records have usually been discounted).

The information for the host catalogue derives largely from specimens in the collection of the British Museum (Natural History). Many of these specimens have been received from time to time as duplicate specimens submitted to the Commonwealth Institute of Entomology for identification, usually by Australian state departments of agriculture and forestry; for this reason the BMNH collection is more comprehensive than any other in Australian Tachinidae reared from known hosts, and the host catalogue is almost as completely comprehensive as it is possible

to make it at the present time (though, as aforesaid, a search of collections in Australia will yield up a few additional records that have not been known to me while preparing the present work).

A SYNOPSIS OF THE HOST-RELATIONS OF AUSTRALIAN TACHINIDAE

Hosts are known for almost a quarter of the described Australian tachinid fauna, but as the described fauna probably does not represent more than about a quarter or fifth of the actual number of species in Australia it is evident that knowledge of the hosts is only very fragmentary at present. The following comments summarize the host-relations for the different host orders and parasite groups, so far as they can be generalized from what is already known.

Lepidoptera. This order provides the hosts for the great bulk of forms in the Tachininae and Goniinae, but is not parasitized by any Phasiinae or Proseninae. Both butterflies and moths are attacked, and 27 families are so far known to provide tachinid hosts in Australia. Some lepidopterous species, especially in the Noctuidae, are attacked by several species of Tachinidae, at least nine species attacking the army-worm *Pseudaletia unipuncta*.

Coleoptera. This order is next in importance to the Lepidoptera in the number of host members it provides, though up to now only four families are known to be involved as hosts of Australian Tachinidae. Members of the order are attacked by the Proseninae, Palpostomatini, several genera of Blondeliini and apparently by *Apatemyia* (probably Leskiini) and *Pseudalsomyia* (Eryciini). The Proseninae and Palpostomatini are confined to beetle hosts in the larval and adult stages respectively and mainly attack Scarabaeidae.

Hemiptera. Heteropterous land bugs are hosts of the Phasiinae only, and in Australia this subfamily (on the limited evidence so far) is confined to hemipterous hosts. Members of the Coreidae, Lygaeidae and Pyrrhocoridae provide the hosts so far discovered, but the Australian Pentatomidae are almost certainly parasitized also (as the genus *Pentatomophaga* has pentatomid hosts in Java and New Guinea).

Orthoptera. Acridoidea of the families Acrididae and Eumastacidae are the hosts of the Acemyini, and this tribe is confined to acridoid hosts. The most polyphagous species of tachinid known in the Australian fauna, though its host species are all acridids and eumastacids, is *Ceracia fergusonii*, which has been reared from 28 host species (22 undescribed and the others named). Blackith (1967) has discussed this species under the name *Myothyria fergusonii*, and this work is the only paper of any note that has yet appeared on the biology of any Australian Tachinidae. Hosts are not yet known in Australia for *Phorocerosoma* (tribe Ethillini) or the Ormiini, but it is likely that these tachinids will be found to have orthopterous hosts: *Phorocerosoma* is a parasite of Acridoidea in Japan and in Africa, and the Ormiini are parasites of nocturnally active Tettigoniidae s.l. wherever the hosts are known (New World, southern Europe, Fiji).

Hymenoptera. In Australia the Hymenoptera are parasitized only by a few members of the subfamily Goniinae. The Anacamptomyiini are parasites in the nests of certain Vespoidea, and several species of the *Froggattimyia-Zenargomyia* complex (Blondeliini) attack the larvae of certain sawflies (Pergidae and Argidae).

Phasmatodea. Although 130 species of Phasmatidae are known in Australia only two of these are known to be hosts of Tachinidae. These two species are attacked by an undescribed species of Tachinidae that represents an undescribed genus of doubtful affinity (but possibly belonging near the Acemyini). This tachinid is remarkable for its very strong downcurved hook-like ovipositor. The hosts of the genus *Mycteromyiella* (? Ethillini) are not known in Australia, but in the Solomon Islands species of *Mycteromyiella* attack stick-insects of the genera *Ophicrania* Kaup and *Megacrania* Kaup; it seems likely that the Australian species of *Mycteromyiella* might similarly attack phasmatids.

Mantodea. Only one of the 118 species of Mantodea in Australia has so far been recorded as host of a tachinid, viz. *Pseudomantis albofimbriata* which has been found parasitized by *Exorista coras*. Ordinarily the Lepidoptera are hosts of exoristine tachinids, but the record of *E. coras* from a mantid and of an unidentified *Exorista* species from a mantid in Guadalcanal (latter obtained by R. W. Paine) suggest that parasitism of mantids by exoristine tachinids is an occasional phenomenon in a group that habitually parasitizes lepidopterous caterpillars. In other regions the Mantodea are parasitized by other tachinid tribes that are probably close relatives of the Exoristini, such as the Masiphyini in the Neotropical Region and certain Ethillini in the Ethiopian Region.

Diptera. The only record of Diptera as hosts of Tachinidae in Australia is that of Spratt & Wolf (1972).

The subfamilies and tribes of Australian Tachinidae and their host groups

The following synopsis is given to show at a glance the various host groups for the subfamilies and tribes of Tachinidae known to be represented in Australia. The subfamilies and tribes are listed in the systematic order adopted in the taxonomic catalogue (Part II). For some tribes there are no Australian host records yet available, in which case the host information given is derived from extra-Australian records and annotated as appropriate.

<i>Subfamily</i>	<i>Tribe</i>	<i>Host-group</i>
PHASIINAE	Trichopodini	Hemiptera-Heteroptera
	Phasiini	Hemiptera-Heteroptera
	Cylindromyiini	Hemiptera-Heteroptera [apparently no Australian records to date]
	Leucostomatini	Hemiptera-Heteroptera
	Eutherini	Hemiptera-Heteroptera Pentatomidae [no Australian records to date]
PROSENINAE (DEXIINAE)	Prosenini	Coleoptera (larvae)
	Rutiliini	Coleoptera (larvae)

TACHININAE (MACQUARTIINAE)	Palpostomatini*	Coleoptera (adults)
	Myiotrixini*	[Unknown]
	Ormiini*	Orthoptera Tettigoniidae s.l. [no Australian records to date]
	Glaurocarini*	Orthoptera Tettigoniidae of <i>Glaurocara</i> , Lepidoptera of <i>Doddiana</i> [no Australian records to date]
	Campylochetini	Lepidoptera (larvae)
	Voriini	Lepidoptera (larvae)
	Thelairini	Lepidoptera (larvae) [no Australian records to date]
	Minthoini	Lepidoptera (larvae)
	Nemoraeni	Lepidoptera (larvae)
	Leskiini	Lepidoptera (larvae)
	Ernestiini	Lepidoptera (larvae)
	Parerigonini*	[Apparently unknown, no Australian records to date]
	Linnaemyini	Lepidoptera (larvae)
	Tachinini	Lepidoptera (larvae)
GONIINAE	Acemyini	Orthoptera Acridoidea
	Neaerini	Lepidoptera (larvae)
	Siphonini	Lepidoptera (larvae)
	Blondeliini	Coleoptera (larvae and adults), Hymenoptera Symphyta (larvae), Lepidoptera (larvae)
	Exoristini	Lepidoptera (larvae), Hymenoptera Symphyta (larvae) [no Australian records to date], Mantodea [very rarely]
	Ethillini	Lepidoptera (larvae), Orthoptera Acridoidea for <i>Phorocerosoma</i> [no Australian records to date], Phasmatodea for <i>Mycteromyiella</i> [no Australian records to date, genus possibly not true ethilline]
	Winthemiini	Lepidoptera (larvae)
	Carceliini	Lepidoptera (larvae)
	Anacamptomyiini	Hymenoptera Vespoidea (larvae)
	Sturmiini	Lepidoptera (larvae), Hymenoptera Symphyta (larvae) [rarely, no Australian records to date]
	Goniini	Lepidoptera (larvae)
	Eryciini	Lepidoptera (larvae), Coleoptera Cerambycidae (larvae) for <i>Pseudalsomyia</i> , Hymenoptera Symphyta (larvae) [rarely, no Australian records to date], Diptera Tabanidae (adults) for <i>Bactromyiella</i>

* The affinities of the tribes so marked are very obscure. Their placement in Tachininae is an interim measure until the relationships can be more clearly determined. Sabrosky & Arnaud (1966), following Townsend, place the Palpostomatini in Phasiinae and the Glaurocarini and Ormiini in Proseninae.

PARASITE-HOST LIST

The tachinid parasites cited in the list are arranged in alphabetical order of their tribes, and alphabetically by genus and species within each tribe; the names used

are those considered valid in the taxonomic catalogue (Part II). The names of hosts are those considered currently valid and are arranged alphabetically within each host family; when two or more families are represented in the host list pertaining to any parasite then each begins on a separate line. The order and family of the host(s) are shown in parentheses after the host name(s), and the following abbreviations are used for the host orders: COL., Coleoptera; HEM., Hemiptera; HYM., Hymenoptera; LEP., Lepidoptera; MANT., Mantodea; ORTH., Orthoptera; PHAS., Phasmatodea. Subgeneric names are omitted for both tachinids and hosts. Authors' names are omitted for both parasite and host species: those of the Tachinidae can be found in the taxonomic catalogue (Part II) and those for the hosts are given in the 'host-parasite list' (beginning on p. 178).

The great majority of host records are derived from data on tachinid specimens in the British Museum (Natural History) collection or from host data published with the original tachinid descriptions, or from both, and these are the sources of information unless a host name is annotated by an entry in square brackets. Annotations in square brackets refer to host records that are accepted as correct, either on the basis of a published record that is unexceptionable or on the basis of tachinid specimens from known hosts examined and identified by me and housed in an Australian departmental collection. In citing such collections the following abbreviations are used: NSWDA, New South Wales Department of Agriculture, Rydalmere; QDPI, Queensland Department of Primary Industries, Brisbane; WARI, Waite Agricultural Research Institute, South Australia. These abbreviations are only used when the collections to which they refer contain species from known hosts that are *not* duplicated by specimens in the BMNH collection; when specimens of any tachinid parasite from the same host are housed both in the BMNH collection and in NSWDA, QDPI or WARI then no annotation is given.

Whenever such information has been available the hosts are listed for undescribed or undeterminable species as well as those for which specific identities are known. Similarly, hosts are indicated for known tachinid parasites in instances where the host identities are not fully known.

Tachinid Parasites

Hosts

ACEMYINI

Ceracia fergusonii

Azelota diversipes, *Chortoicetes terminifera*, *Macrotona australis*, *Urmisa rugosa* (ORTH., Acrididae) [Blackith, 1967]

Keyacris interpres, *Keyacris marcida*, *Moraba amicali*, *Moraba keyi*, *Moraba misilliformis*, *Moraba viatica*, and 22 undescribed spp. (ORTH., Eumastacidae) [Blackith, 1967]

Ceracia spp.

Coryphistes longipennis, *Gastrimargus musicus* (ORTH., Acrididae)

ANACAMPTOMYIINI

- Anacamptomyia nigriventris* *Polistes tasmaniensis*, *Polistes* sp. (HYM., Vespidae)
Euvespivora decipiens *Polistes* sp. (HYM., Vespidae)
Koralliomysia sp. *Ropalidia marginata jucunda* (HYM., Vespidae)
Koralliomysia sp. *Polistes* sp. (HYM., Vespidae)

BLONDELIINI

- Anagonia anguliventris* *Paropsis atomaria* (COL., Chrysomelidae)
Anagonia lasiophthalma *Gonipterus scutellatus* (COL., Curculionidae)
Anagonia lateralis *Bryachus squamicollis* (COL., Curculionidae). Unidentified chrysomelid larva (COL.)
Anagonia scutellata Unidentified chrysomelid (COL.)
Compsilura concinnata *Anomis xanthindyma* [QDPI], *Brithys crini*, *Spodoptera* sp. [QDPI] (LEP., Noctuidae)
Froggattimyia hirta *Doratifera vulnerans* [NSWDA] (LEP., Limacodidae)
Froggattimyia nicholsoni *Archips australana* [NSWDA] (LEP., Tortricidae)
Froggattimyia tillyardi Numerous other LEP. hosts in extra-Australian regions
Froggattimyia wentworthi *Lophytoma* sp. *Perga glabra*, *Pterygophorus analis* [Malloch, 1934] (HYM., Pergidae)
Lecanipa sp. (2) *Perga dorsalis* (HYM., Pergidae)
Lixophaga sphenophori *Paropsis atomaria* (COL., Chrysomelidae)
Medinodexia morgani Unidentified pergid (HYM.)
Monoleptophaga caldwelli *Pterolocera* sp. (LEP., Anthelidae)
Paropsivora australis *Rhabdoscelus obscurus* (COL., Curculionidae)
Paropsivora grisea *Aulacophora hilaris* (COL., Chrysomelidae)
Paropsivora sp. *Monolepta australis* (COL., Chrysomelidae)
Trigonospila brevifacies *Chrysophtharta bimaculata* (COL., Chrysomelidae)
Zenargomyia moorei *Paropsis atomaria* (COL., Chrysomelidae)
Zenargomyia moorei *Paropsis* sp.
Zenargomyia moorei *Heliocausta hemiteles* [NSWDA] (LEP., Oecophoridae)
Zenargomyia moorei *Phthorimaea operculella* (LEP., Gelechiidae)
Zenargomyia moorei *Zenarge turneri* (HYM., Argidae)

CAMPYLOCHETINI

- Elpe* sp. *Ocinara lewinae* Lewin [NSWDA] (LEP., Bombycidae)
Elpe sp. *Scoliacma bicolora* (LEP., Arctiidae)

CARCELIINI

- Carcelia cosmophilae* *Acantholeucania loreyi*, *Achaea janata* [QDPI], *Anomis* *erosa* [QDPI], *Anomis flava*, *Plusia argentifera*, *Pseudaletia unipuncta* (LEP., Noctuidae)
Carcelia murina *Ialmenus evagoras* [QDPI] (LEP., Lycaenidae)
Carcelia noctuae *Graphium macleayanus* (LEP., Papilionidae)
Carcelia sp. *Anthela varia* [NSWDA], *Anthela* sp. (LEP., Anthelidae)
Carcelia sp. *Anomis flava*, *Anticarsia irrorata*, *Euxoa radians* [QDPI]
Carcelimysia dispar *Heliothis armigera*, *Heliothis punctigera* [QDPI], *Pseudaletia unipuncta* [QDPI] (LEP., Noctuidae)
Carcelia sp. *Orgyia anartoides* [NSWDA] (LEP., Lymantriidae)
Carcelia sp. *Tisiphone* sp. (LEP., Nymphalidae)
Carcelia sp. *Delias agamippe* [NSWDA] (LEP., Pieridae)
Carcelimysia dispar *Ochrogaster contraria*, *Ochrogaster* sp. (LEP., Notodontidae)
Carcelimysia dispar *Panacela lewinae* [NSWDA] (LEP., Eupterotidae)

ERNESTIINI

Chlorotachina sp. n.*Hesperilla* sp. (LEP., HesperIIDae)

ERYCIINI

Apomya sp. ? *flavisquama**Apomya* sp.*Bactromyiella ficta**Bactromyiella* ? *ficta**Chlorogastropsis orga**Pseudalsomyia pilifacies**Teretophora fasciata**Teretophora* sp.

Undetermined genus (near

Chlorogastropsis) 1

Undetermined genus (near

Chlorogastropsis) 2

Undetermined genus

Undetermined genus

Erysichton lineata lineata [QDPI] (LEP., Lycaenidae)*Nacaduba biocellata biocellata* (LEP., Lycaenidae)*Nacoleia octasema*, unidentified sp. (LEP., Pyralidae)*Dasybasis hebes*, *Dasybasis oculata* (DIPT., Tabanidae)

[Spratt & Wolf, 1972]

Metura elongata (LEP., Psychidae)

Unidentified cerambycid (COL.)

Arachnographa micrastrella, *Heliocausta hemiteles* [NSWDA],*Philobota facialis* (LEP., Oecophoridae)*Plectophila discalis* (LEP., Xyloryctidae)*Araeostoma aenicta* (LEP., Xyloryctidae)*Procometis* sp. [WARI] (LEP., Xyloryctidae)*Pollanisus viridipulverulentus* (LEP., Zygaenidae)'Light Brown Apple Moth' (LEP., ? *Epiphyas postvittana*, Tortricidae)

ETHILLINI

*Ethilla translucens**Scoliacma bicolora* (LEP., Arctiidae)*Ethilla* sp.*Terpna* sp. (LEP., Geometridae)*Anisozygia pieroides* [QDPI] (LEP., Geometridae)

EXORISTINI

Austrophorocera sp.*Eozenillia remota**Exorista coras**Exorista curriei**Exorista flaviceps**Exorista mungomeryi**Exorista psychidivora**Exorista sorbillans**Exorista* spp.*Doratifera casta*, [NSWDA], *Doratifera vulnerans* [NSWDA],*Doratifera* sp. (LEP., Limacodidae)*Anthela ariprepes* [NSWDA] (LEP., Anthelidae)*Hyalarcta huebneri*, *Hyalarcta nigrescens* (LEP., Psychidae)*Pseudomantis albofimbriata* [NSWDA] (MANT., Mantidae)*Heliothis armigera*, *Heliothis punctigera* (LEP., Noctuidae)*Ipanica cornigera* (LEP., Agaristidae)*Acyphyas leucomelas* [WARI] (LEP., Lymantriidae)*Pterolocera* sp. (LEP., Anthelidae)*Pieris rapae* (LEP., Pieridae)*Roeselia metallopa* (LEP., Nolidae)*Heliothis punctigera* [NSWDA, QDPI], *Spodoptera exempta*,*Spodoptera mauritia* (LEP., Noctuidae)

Unidentified psychid (LEP.)

Anomis planalis [QDPI], *Anomis flava* [QDPI], *Spodoptera**exempta* [NSWDA] (LEP., Noctuidae)*Doleschallia bisaltide australis* (LEP., Nymphalidae) [Malloch 1929b : 332]*Ialmenus evagoras* [QDPI] (LEP., Lycaenidae)

Numerous other LEP. hosts in extra-Australian regions

Animula herrichi [NSWDA], *Hyalarcta huebneri* (LEP., Psychidae)*Leptocneria reducta* [NSWDA] (LEP., Lymantriidae)*Loxostege* sp. [QDPI] (LEP., Pyralidae)*Ochrogaster contraria* (LEP., Notodontidae)*Phalaenoides glycine* [NSWDA] (LEP., Agaristidae)

Spoggosia sp. n.
Stomatomyia tricholygoides

Anthela excellens (LEP., Anthelidae)
Amata sp. ? *aperta* [NSWDA] (LEP., Amatidae)
Loxostege affinitalis [NSWDA] (LEP., Pyralidae)
Pseudaletia convecta, *Pseudaletia unipuncta* [NSWDA],
Spodoptera exempta (LEP., Noctuidae)

GONIINI

Goniophthalmus australis
Goniophthalmus rufescens

Heliothis armigera, *Heliothis* sp., *Pseudaletia* sp. [QDPI],
Spodoptera exempta, *Spodoptera mauritia* (LEP., Noctuidae)
Neocleptria punctifera [NSWDA], *Pandesma quenavadi*
 (LEP., Noctuidae)

LESKIINI

Apatemyia sp.
Demoticoides pallidus
Sipholeskia sp. ? *certima*

Unidentified curculionid larva (COL.)
 'Cedar Shoot Borer' (LEP.)
Lygropia clytusalis (LEP., Pyralidae)

LEUCOSTOMATINI

Leucostoma simplex

Nysius vinitor (HEM., Lygaeidae)

LINNAEMYINI

Chaetophthalmus bicolor
Chaetophthalmus biserialatus

Agrotis ipsilon, *Pseudaletia unipuncta* (LEP., Noctuidae)
Heliothis armigera, *Heliothis punctigera*, *Heliothis* sp.
 [QDPI], *Pseudaletia convecta* (LEP., Noctuidae)
Nyctemera amica, *Utetheisa pulchelloides* (LEP., Arctiidae)

Chaetophthalmus pallipes
Chaetophthalmus spp.

Euxoa radians (LEP., Noctuidae)
Agrotis munda, *Heliothis punctigera*, *Heliothis* sp. [NSWDA,
 QDPI], *Persectania ewingii* [NSWDA], *Pseudaletia convecta*
 [NSWDA] (LEP., Noctuidae)

Linnaemya concavicornis
Linnaemya sp.

Pseudaletia unipuncta (LEP., Noctuidae)
Maruca testulalis [QDPI] (LEP., Pyralidae)

MINTHOINI

Mintroxia dasyops

Barea consignatella (LEP., Oecophoridae)

NEAERINI

Voriella uniseta

Cydia molesta [NSWDA], *Epiphyas postvittana* (LEP.,
 Tortricidae)

Undescribed gen. & sp. (QLD)
 Undetermined genus, sp. n.

'Soya Bean Leaf Tier' (LEP., ? Pyralidae)
Procometis sp. (LEP., Xyloryctidae)

NEMORAEINI

Nemoraea sp. n.

Theretra nessus [NSWDA] (LEP., Sphingidae)

PALPOSTOMATINI

Palpostoma aldrichi
Palpostoma desvoidyi
Palpostoma flavum
Palpostoma testaceum

Dermolepida albohirta (COL., Scarabaeidae)
Lepidiota frenchi (COL., Scarabaeidae)
Anoplostethus opalinus (COL., Scarabaeidae)
Dermolepida albohirta, *Heteronychus arator*, *Lepidiota*
caudata, *Metanastes vulgivagus*, *Pseudholophylla fur-*
furacea (COL., Scarabaeidae)

Palpostoma spp.

Anomalophylla sp. [Hardy, 1938], *Lepidiota trichosterna*
 [Hardy, 1938], *Metanastes vulgivagus*, *Pseudholophylla*
furfuracea [Hardy, 1938]

PHASIINI

Alophora aureiventris
Alophora lepidifera
Besserioides varicolor

Dysdercus sidae (HEM., Pyrrhocoridae)
Nysius vinitor (HEM., Lygaeidae)
Dysdercus sidae (HEM., Pyrrhocoridae)

PROSENINI

Platytaenia maculata
Prosenia nigripes

Unidentified cerambycid (COL.)
Dermolepida albohirta (COL., Scarabaeidae)

RUTILIINI

Amphibolia ignorata
Rutilia s.l. spp.

Unidentified melolonthine chafer grubs (COL., Scarabaeidae) [Paramonov, 1968]
Anoplognathus spp., *Dasygnathus* sp., *Dermolepida* sp., *Lepidiota* spp., (COL., Scarabaeidae) [From scattered literature references: identities of *Rutilia* species all suspect]

SIPHONINI

Actia eucosmae
Ceromya norma
Ceromya parviseta
Ceromya sp. ? *fergusoni*
Peribaea argentifrons

Crociosema plebeiana (LEP., Tortricidae)
Pseudaletia convecta [NSWDA] (LEP., Noctuidae)
Isotenes miserana [NSWDA] (LEP., Tortricidae)
 Unidentified geometrid (LEP.)
Copromorpha prasinochroa [NSWDA] (LEP., Copromorphidae)

Peribaea orbata

Homoeosoma vagella (LEP., Pyralidae)
Acantholeucania loreyi, *Heliothis* sp. [QDPI], *Pseudaletia unipuncta*, *Spodoptera exempta*, *Spodoptera litura* (LEP., Noctuidae)

Peribaea plebeia
Peribaea sp. ? *plebeia*
Peribaea sp.

Earias huegeli (LEP., Noctuidae)
 ? *Anthela* sp. [NSWDA] (LEP., Anthelidae)
Homoeosoma vagella [QDPI] (LEP., Pyralidae)

STURMIINI

Anamastax sp. n.
Blepharipa fulviventris

Panacela lewinae (LEP., Eupterotidae)
Anthela varia (LEP., Anthelidae)
Hippotion celerio, *Theretra nessus* [NSWDA] (LEP., Sphingidae)
Delias argenthona [QDPI] (LEP., Pieridae)
Papilio aegeus, *Papilio anactus*, *Papilio* sp. LEP., Papilionidae)

Blepharipa spp.

Anthela varia, *Anthela* sp. (LEP., Anthelidae)
Agrius convolvuli, *Chromis erotus*, *Hippotion celerio*, *Theretra nessus* [NSWDA] (LEP., Sphingidae)
Orgyia anartoides (LEP., Lymantriidae)
Plusia sp. (LEP., Noctuidae)
Graphium sarpedon [NSWDA] (LEP., Papilionidae)
Plusia sp. (LEP., Noctuidae)
 Unidentified pyralid (LEP.)
Doratifera sp. (LEP., Limacodidae)
Pseudaletia convecta [QDPI], *Spodoptera* sp. [QDPI] (LEP., Noctuidae)

Eurygastropsis tasmaniae
Palexorista bancrofti
Palexorista macquarti
Palexorista solennis

Palexorista subanajama

Acantholeucania loreyi (LEP., Noctuidae)

<i>Pallexorista</i> spp.	<i>Apina callisto</i> (LEP., Agaristidae) <i>Spilosoma glatignyi</i> (LEP., Arctiidae) <i>Entometa australasiae</i> (LEP., Lasiocampidae) <i>Doratifera casta</i> (LEP., Limacodidae) <i>Habrophylla euryzona</i> (LEP., Lymantriidae) <i>Heliothis</i> sp. [QDPI], <i>Persectania ewingii</i> , <i>Plusia</i> sp. [QDPI], <i>Pseudaletia convecta</i> , <i>Pseudaletia unipuncta</i> [QDPI], <i>Spodoptera exempta</i> [NSWDA] (LEP., Noctuidae) <i>Archernis mitis</i> [NSWDA], <i>Loxostege affinitalis</i> [QDPI], <i>Maruca testulalis</i> [QDPI] (LEP., Pyralidae) Unidentified sphingid (LEP.)
<i>Paradrino laevicula</i>	<i>Merophyas divulsana</i> [WARI] (LEP., Tortricidae) <i>Plusia argentifera</i> (LEP., Noctuidae) <i>Danaus plexippus</i> [QDPI], <i>Euploea core corinna</i> (LEP., Nymphalidae) <i>Delias aganippe</i> (LEP., Pieridae) <i>Margaronia hyalinata</i> (LEP., Pyralidae)
<i>Polychaeta nigra</i>	Unidentified LEP. [NSWDA]
<i>Polychaeta</i> sp.	Unidentified LEP. [McFarland Ref. N. 114]
<i>Sisyropa</i> sp.	<i>Hymenia recurvalis</i> [NSWDA] (LEP., Pyralidae)
<i>Sturmia convergens</i>	<i>Brithys crini</i> [QDPI] (LEP., Noctuidae) <i>Danaus plexippus</i> (LEP., Nymphalidae) <i>Agrius convolvuli</i> [QDPI] (LEP., Sphingidae)
<i>Sturmia</i> sp.	<i>Precis villida</i> (LEP., Nymphalidae)
<i>Tritaxys heterocera</i>	<i>Acantholeucania loreyi</i> , <i>Euxoa</i> sp. [NSWDA], <i>Persectania ewingii</i> , <i>Pseudaletia convecta</i> , <i>Pseudaletia unipuncta</i> (LEP., Noctuidae)
<i>Tritaxys milias</i>	<i>Agrotis infusa</i> [NSWDA], <i>Agrotis ipsilon</i> [QDPI], <i>Euxoa radians</i> , <i>Heliothis punctigera</i> [QDPI], <i>Persectania ewingii</i> [NSWDA] (LEP., Noctuidae)
<i>Tritaxys</i> sp.	<i>Pterolocera</i> sp. (LEP., Anthelidae)
<i>Zygothria atropivora</i>	<i>Psilogramma menephron</i> [NSWDA] (LEP., Sphingidae) Numerous other LEP. hosts in extra-Australian regions
Undetermined genus	<i>Heliocausta rufogrisea</i> [NSWDA] (LEP., Oecophoridae)
Undetermined genus	<i>Orgyia anartoides</i> [NSWDA] (LEP., Lymantriidae)
Undetermined genus	<i>Xylorycta luteotactella</i> (LEP., Xyloryctidae)

TACHININI

<i>Cuphocera emmesia</i>	Unidentified LEP. [McFarland Ref. N. 114]
<i>Cuphocera varia</i>	<i>Acantholeucania loreyi</i> , <i>Pseudaletia unipuncta</i> (LEP., Noctuidae) Also <i>Spodoptera</i> spp. in Oriental Region
<i>Microtropesa flaviventris</i>	<i>Persectania ewingii</i> , <i>Pseudaletia convecta</i> [NSWDA] (LEP., Noctuidae)

TRICHOPODINI

<i>Pentatomophaga bicincta</i>	<i>Amblypelta lutescens</i> (HEM., Coreidae) Also <i>Axiagastus</i> sp. (HEM., Pentatomidae) in New Guinea
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VORIINI

<i>Hyleorus</i> sp.	<i>Euproctis lutea</i> (LEP., Lymantriidae) Unidentified arctiid larva (LEP.) [QDPI]
<i>Hystricovoria</i> sp.	<i>Armactica columbina</i> , <i>Xanthodes albago</i> (LEP., Noctuidae)

*Voria ruralis**Plusia argentifera* (LEP., Noctuidae)

Numerous other LEP. (also HYM.) hosts in extra-Australian regions

WINTHEMIINI

*Winthemia lateralis**Spilosoma glatignyi* (LEP., Arctiidae)*Pseudaletia unipuncta* [NSWDA] (LEP., Noctuidae)*Winthemia neowinthemioides**Brithys crini* [QDPI] (LEP., Noctuidae)*Euploea core corinna*, *Euploea* sp., *Danaus plexippus* (LEP., Nymphalidae)*Winthemia trichopareia**Catopsilia pyranthe* (LEP., Pieridae)*Winthemia* spp.*Porela arida* [NSWDA] (LEP., Lasiocampidae)*Anomis flava* [QDPI], *Euxoa* sp. [NSWDA], *Heliothis armigera* [QDPI], *Heliothis* sp. [QDPI], *Pseudaletia convecta* [NSWDA] (LEP., Noctuidae)*Anaphaeis java* [QDPI], *Delias aganippe*, *Delias nigrina* (LEP., Pieridae)

UNDETERMINED TRIBE

Undescribed gen. & sp.

Didymuria violescens (PHASM., Phasmatidae)*Tropidoderus childrenii* (PHASM., Phasmatidae)

UNDETERMINED TRIBE

Undescribed gen. & sp.

Heteronympha merope merope (LEP., Nymphalidae)

[McFarland Ref. Ny. 33]

HOST-PARASITE LIST

The host orders, and families within each order, are arranged alphabetically. Host species within each family are arranged in alphabetical order of their valid binomina, and the author's name is given for each host species. The tachinid parasites known for each host are given in alphabetical order of their valid binomina, the names always corresponding with those considered valid in the taxonomic catalogue (Part II); subfamily and tribal placements and authors' names are omitted for the tachinid parasites as they can all be found easily, if required, from the taxonomic catalogue, and the tribal positions are clear also from the 'parasite-host list' (beginning on p. 171).

The well-known generic instability in the Lepidoptera imposes the need to provide additional names for the lepidopterous hosts that help to link the binomina that are currently considered valid with those that actually appear in literature references or on the data labels attached to reared tachinid specimens. Whenever necessary earlier generic combinations for the host species are shown in square brackets on a separate line immediately below the presently valid name. Similarly, when the specific name that has been in use is now supplanted by a valid senior synonym the supplanted name is shown in square brackets. In a very few instances the whole binomen has changed, in which case the whole former binomen is indicated in square brackets.

*Hosts**Tachinid Parasites*Order **COLEOPTERA**

CERAMBYCIDAE

Unidentified larvae

Platytainia maculata, *Pseudalsomyia pilifacies*

CHRYSOMELIDAE

Aulacophora hilaris Boisduval
Chrysophtharta bimaculata Olivier
Monolepta australis Jacoby
 [M. rosea Blackburn]
Paropsis atomaria Olivier
 [P. reticulata Marsh]
Paropsis sp.
 Unidentified spp.

Medinodexia morgani
Paropsivora australis
Monoleptophaga caldwelli
Anagonia anguliventris, *Froggattimyia*
tillyardi, *Paropsivora grisea*
Paropsivora sp.
Anagonia lateralis, *Anagonia scutellata*

CURCULIONIDAE

Bryachus squamicollis Pascoe
Gonipterus scutellatus Gyllenhal
Rhabdoscelus obscurus Boisduval
 [Rhabdocnemis obscura]
 Unidentified larva

Anagonia lateralis
Anagonia lasiophthalma
Lixophaga sphenophori
Apatemyia sp.

SCARABAEIDAE

Anomalophylla sp.
Anoplognathus spp.
Anoplostethus opalinus Brullé
Dasygnathus sp.
Dermolepida albohirta Waterhouse
 [Lepidoderma albohirtum]
Heteronychus arator Fabricius
 [H. sanctaehelenae Blanchard]
Lepidiota caudata Blackburn
Lepidiota frenchi Blackburn
Lepidiota trichosterna Lea
Lepidiota spp.
Metanastes vulgivagus Olliff
 [M. blackburni Arrow]
Pseudoholophylla fufuracea Burmeister
 Unidentified melolonthine larvae

Palpostoma sp.
Rutilia s.l. spp.
Palpostoma flavum
Rutilia s.l. sp.
Palpostoma aldrichi, *Palpostoma testaceum*,
Prosenia nigripes
Palpostoma testaceum
Palpostoma testaceum
Palpostoma desvoidyi
Palpostoma sp.
Rutilia s.l. spp.
Palpostoma testaceum, *Palpostoma* sp.
Palpostoma testaceum, *Palpostoma* sp.
Amphibolia ignorata Paramonov

Order DIPTERA

TABANIDAE

Dasybasis hebes Walker
Dasybasis oculata Ricardo

Bactromyiella ? ficta
Bactromyiella ? ficta

Order HEMIPTERA

COREIDAE

Amblypella lutescens Distant

Pentatomophaga bicincta

LYGAEIDAE

Nysius vinitor Bergroth

Alophora lepidofera, *Leucostoma simplex*

PYRRHOCORIDAE

Dysdercus sidae Montrouzier

Alophora aureiventris, *Besserioides varicolor*

Order **HYMENOPTERA**

ARGIDAE

Zenarge turneri Rohwer*Zenargomyia moorei*

PERGIDAE

Lophyrotoma sp.[*Platypsectra* sp.]*Perga dorsalis* Leach*Perga glabra* Kirby*Pterygophorus analis* Costa

Unidentified pergid

*Froggattimyia hirta**Froggattimyia nicholsoni**Froggattimyia hirta**Froggattimyia hirta**Froggattimyia wentworthi*

VESPIDAE

Polistes tasmaniensis Saussure*Polistes* sp.*Polistes* sp.*Polistes* sp.*Ropalidia marginata jucunda* Cameron*Anacamptomyia nigriventris**Anacamptomyia nigriventris**Euvespivora decipiens**Koralliomysia* sp.*Koralliomysia* sp.Order **LEPIDOPTERA**

AGARISTIDAE

Apina callisto Walker*Ipanica cornigera* Butler*Phalaenoides glycine* Lewin[*Agarista* g.]*Palexorista* sp.*Exorista curriei**Exorista* sp.

AMATIDAE

Amata ? *aperta* Walker[*Syntomis* ? *a.*]*Stomatomyia tricholygoides*

ANTHELIDAE

Anthela ariprepes Turner*Anthela excellens* Walker*Anthela varia* Walker*Anthela* sp.[*Darala* sp.]? *Anthela* sp.*Eozenillia remota**Spoggosia* sp. n.*Blepharipa fulviventris*, *Blepharipa* sp., *Carcelia murina**Carcelia murina**Peribaea* sp. ? *plebeia*

ARCTIIDAE

Nyctemera amica White*Scoliacma bicolora* Boisduval[*Scolisoma* b.]*Spilosoma glatignyi* Le Guilleau*Utetheisa pulchelloides* Hampson

Unidentified arctiid

*Chaetophthalmus biseriatus**Elpe* sp., *Ethilla translucens**Palexorista* sp., *Winthemia lateralis**Chaetophthalmus biseriatus**Hyleorus* sp.

BOMBYCIDAE

Ocinara lewinae Lewin*Elpe* sp.

COPROMORPHIDAE

Copromorpha prasinochroa Meyrick*Peribaea argentifrons*

EUPTEROTIDAE

Panacela lewinae Lewin*Anamastax* sp. n., *Carcelimyia dispar*

GELECHIIDAE

Phthorimaea operculella Zeller
[*Gnorimoschema* o.]*Trigonospila brevifacies*

GEOMETRIDAE

Anisozyga pieroides Walker
[*Eucyclodes* p.]
Unidentified geometrid*Ethilla* sp.*Ceromya* sp. ? *fergusoni*

HESPERIIDAE

Hesperilla sp.*Chlorotachina* sp. n.

LASIOCAMPIDAE

Entometa australasiae Fabricius
[*Digglesia* a.]
Porela arida Walker*Palexorista* sp.*Winthemia trichopareia*

LIMACODIDAE

Doratifera casta Scott
Doratifera vulnerans Lewin
Doratifera sp.*Austrophorocera* sp., *Palexorista* sp.
Austrophorocera sp., *Compsilura concinnata*
Austrophorocera sp., *Palexorista macquarti*

LYCAENIDAE

Erysichton lineata lineata Murray
Ialmenus evagoras Donovan
Nacaduba biocellata biocellata Felder*Aplomya* sp. ? *flavisquama*
Carcelia cosmophilae, *Exorista sorbillans*
Aplomya sp.

LYMANTRIIDAE

Acyphyas leucomelas Walker
Euproctis lutea Fabricius
[*Porthesia* l.]
Habrophylla euryzona Lower
Leptocneria reducta Walker
[*Lymantria* r.]
Orgyia anartoides Walker
[*Teia* a.]*Exorista flaviceps*
Hyleorus sp.*Palexorista* sp.
Exorista sp.*Blepharipa* sp., *Carcelia* sp., undetermined
sturmiine genus

NOCTUIDAE

Acantholeucania loreyi Duponchel
[*Cirphis* l.]
Achaea janata Linnaeus
Agrotis infusa Boisduval
Agrotis ipsilon Hufnagel
[*Rhyacia* i.]*Carcelia cosmophilae*, *Cuphocera varia*, *Palexorista*
subanajama, *Peribaea orbata*, *Tritaxys heterocera*
Carcelia cosmophilae
Tritaxys milias
Chaetophthalmus bicolor, *Tritaxys milias*

- Agrotis munda* Walker
Anomis erosa Hübner
 [*Cosmophila* e.]
Anomis flava Fabricius
 [*Cosmophila* f.]
Anomis planalis Swinhoe
 [*Antarchaea chionosticta* Atherton]
Anomis xanthindyma Boisduval
 [*Cosmophila* x.]
Anticarsia irrorata Fabricius
Armactica columbina Walker
Brithys crini Fabricius

Earias huegeli Rogenhofer
Euxoa radians Guenée

Euxoa sp.
Heliothis armigera Hübner
 [*H. obsoleta* misident.]

Heliothis punctigera Walker

Heliothis spp.

Neocleptria punctifera Walker
Pandesma quenavadi Guenée
Persectania ewingii Westwood

Plusia argentifera Guenée

Plusia sp.

Pseudaletia convecta

Pseudaletia unipuncta Haworth
 [*Cirphis* u.]

Spodoptera exempta Walker
 [*Laphygma* e.]

Spodoptera litura Fabricius
 [*Prodenia* l.]
Spodoptera mauritia Boisduval
Spodoptera spp.
Xanthodes albago Fabricius
 [*Acontia malvae* Hübner]
- Chaetophthalmus* sp.
Carcelia cosmophilae

Carcelia cosmophilae, *Carcelia noctuae*, *Exorista sorbillans*, *Winthemia* sp.
Exorista sorbillans

Compsilura concinnata

Carcelia noctuae
Hystricovoria sp.
Compsilura concinnata, *Sturmia convergens*, *Winthemia neowinthemioidea*
Peribaea plebeia
Carcelia noctuae, *Chaetophthalmus pallipes*, *Tritaxys milias*
Tritaxys heterocera, *Winthemia* sp.
Carcelia noctuae, *Chaetophthalmus biseriatus*, *Exorista curriei*, *Goniophthalmus australis*, *Winthemia* sp.
Carcelia noctuae, *Chaetophthalmus biseriatus*, *Chaetophthalmus* sp., *Exorista curriei*, *Exorista mungomeryi*
Chaetophthalmus biseriatus, *Goniophthalmus australis*, *Pallexorista* sp., *Peribaea orbata*, *Winthemia* sp.
Goniophthalmus rufescens
Goniophthalmus rufescens
Chaetophthalmus sp., *Microtropesa flaviventris*, *Pallexorista* sp., *Tritaxys heterocera*, *Tritaxys milias*
Carcelia cosmophilae, *Paradrino laevicula*, *Voria ruralis*
Blepharipa sp., *Eurygastropsis tasmaniae*, *Pallexorista* sp.
Ceromya norma, *Chaetophthalmus biseriatus*, *Chaetophthalmus* sp., *Microtropesa flaviventris*, *Pallexorista solennis*, *Pallexorista* sp., *Stomatomyia tricholygoides*, *Tritaxys heterocera*, *Winthemia lateralis*
Exorista mungomeryi, *Exorista sorbillans*, *Goniophthalmus australis*, *Pallexorista* sp., *Peribaea orbata*, *Stomatomyia tricholygoides*
Peribaea orbata

Exorista mungomeryi, *Goniophthalmus australis*
Compsilura concinnata, *Pallexorista solennis*
Hystricovoria sp.

NOLIDAE

Roeselia metallopa Meyrick
[*Nola m.*]

Exorista flaviceps

NOTODONTIDAE

Ochrogaster contraria Walker
Ochrogaster sp.

Carcelimyia dispar, *Exorista* sp.
Carcelimyia dispar

NYMPHALIDAE

Danaus plexippus Linnaeus
Doleschallia bisaltide australis Felder
Euploea core corinna Macleay
Euploea sp.
Heteronympha merope merope Fabricius
Precis villida Fabricius
Tisiphone sp.

Paradrino laevicula, *Sturmia convergens*
Exorista sorbillans
Paradrino laevicula, *Winthemia neowinthemioides*
Winthemia neowinthemioides
Undescribed gen. & sp. (? tribe)
Sturmia sp.
Carcelia sp.

OECOPHORIDAE

Arachnographa micrastrella Meyrick
Barea consignatella Walker
Heliocausta hemiteles Meyrick
[*Garrha h.*]
Heliocausta rufogrisea Meyrick
[*Garrha r.*]
Philobota facialis Fabricius

Teretrophora fasciata
Minthoxia dasyops
Teretrophora fasciata, *Trigonospila brevifacies*
Undetermined sturmiine genus
Teretrophora fasciata

PAPILIONIDAE

Graphium macleayanus Leech
[*Papilio m.*]
Graphium sarpedon Linnaeus
Papilio aegaeus Donovan
Papilio anactus Macleay
Papilio sp.

Carcelia cosmophilae
Blepharipa sp.
Blepharipa fulviventris
Blepharipa fulviventris
Blepharipa fulviventris

PIERIDAE

Anaphaeis java Sparrman
Catopsilia pyranthe Linnaeus
Delias aganippe Donovan
Delias argenthona Fabricius
Delias nigrina Fabricius
Pieris rapae Linnaeus

Winthemia sp.
Winthemia neowinthemioides
Carcelia sp., *Paradrino laevicula*, *Winthemia* sp.
Blepharipa fulviventris
Winthemia sp.
Exorista flaviceps

PSYCHIDAE

Animula herrichi Westwood
[*Thyridopteryx h.*]
Cryptothelea ignobilis Walker
[*Clania i.*]
Hyalarcta huebneri Westwood
Hyalarcta nigrescens Doubleday
Metura elongata Saunders
[*Oiketicus elongatus*]
Unidentified psychid

Exorista sp.
Undetermined exoristine genus
Eozenillia remota, *Exorista* sp.
Eozenillia remota
Chlorogastropsis orga
Exorista psychidivora

PYRALIDAE

Archernis mitis Turner
Homoiosoma vagella Zeller
Hymenia recurvalis Fabricius
Loxostege affinitalis Lederer
Loxostege sp.
Lygropia clytusalis Walker
 [Sylepta c.]
Margaronia hyalinata Linnaeus
 [Glyphodes h.]
Maruca testulalis Geyer
Nacoleia octasema Meyrick
 Unidentified pyralids

Palexorista sp.
Peribaea argentifrons, *Peribaea* sp.
Sisyropa sp.
Palexorista sp., *Stomatomyia tricholygoides*
Exorista sp.
Sipholeskia sp. ? *certima*

Paradrino laevicula

Linnaemya sp., *Palexorista* sp.
Bactromyiella ficta
Bactromyiella ficta, *Palexorista bancrofti*

SPHINGIDAE

Agrius convolvuli Linnaeus
 [Herse c.]
Chromis erotus Cramer
Hippotion celerio Linnaeus
Psilogramma menephron Cramer
 [Macrosila casuarinae Walker]
Theretra nessus Drury

 Unidentified sphingid

Blepharipa sp., *Sturmia convergens*

Blepharipa sp.
Blepharipa fulviventrif, *Blepharipa* sp.
Zygobothria atropivora

Blepharipa fulviventrif, *Blepharipa* sp., *Nemoraea*
 sp. n.
Palexorista sp.

TORTRICIDAE

Archips australana Lewin
 [Cacoecia a.]
Crociosema plebeiana Zeller
Cydia molesta Busck
Epiphyas postvittana Walker
 [Tortrix p.]
Isotenes miserana Walker
Merophyas divulsana Walker

Compsilura concinnata

Actia eucosmae
Voriella uniseta
Voriella uniseta

Ceromya parviseta
Palexorista sp.

XYLORYCTIDAE

Araeostoma aenicta Turner

Plectophila discalis Walker
Procometis spp.
Xylorycta luteotactella Walker
 [Cryptolechia l.]

Undetermined eryciine genus (near *Chloro-*
gastropsis)
Teretrophora sp.
 Undetermined genera (Eryciini and Neaerini)
 Undetermined sturmiine genus

ZYGAENIDAE

Pollanisus viridipulverulentus
 Guérin-Ménéville

Undetermined eryciine genus

UNDETERMINED FAMILY

Cuphocera emmesia, *Polychaeta nigra*, *Polychaeta*
 sp.

Order MANTODEA

MANTIDAE

Pseudomantis albofimbriata Stål

Exorista coras

Order **ORTHOPTERA**

ACRIDIDAE

<i>Azelota diversipes</i> Rehn	<i>Ceracia fergusoni</i>
<i>Chortoicetes terminifera</i> Walker	<i>Ceracia fergusoni</i>
<i>Coryphistes longipennis</i> Sjöstedt	<i>Ceracia</i> sp.
<i>Gastrimargus musicus</i> Fabricius	<i>Ceracia</i> sp.
<i>Macrotona australis</i> Walker	<i>Ceracia fergusoni</i>
<i>Urnisa rugosa</i> Saussure	<i>Ceracia fergusoni</i>

EUMASTACIDAE

<i>Keyacris interpres</i> Rehn	<i>Ceracia fergusoni</i>
<i>Keyacris marconi</i> Rehn	<i>Ceracia fergusoni</i>
<i>Moraba amiculi</i> Sjöstedt	<i>Ceracia fergusoni</i>
<i>Moraba keyi</i> Rehn	<i>Ceracia fergusoni</i>
<i>Moraba misilliformis</i> Rehn	<i>Ceracia fergusoni</i>
<i>Moraba viatica</i> Erichson	<i>Ceracia fergusoni</i>
Many undescribed spp.	<i>Ceracia fergusoni</i>

Order **PHASMATODEA**

PHASMATIDAE

<i>Didymuria violescens</i> Leach	Undescribed gen. & sp. (? tribe)
<i>Tropidoderus childrenii</i> Gray	Undescribed gen. & sp. (? tribe)

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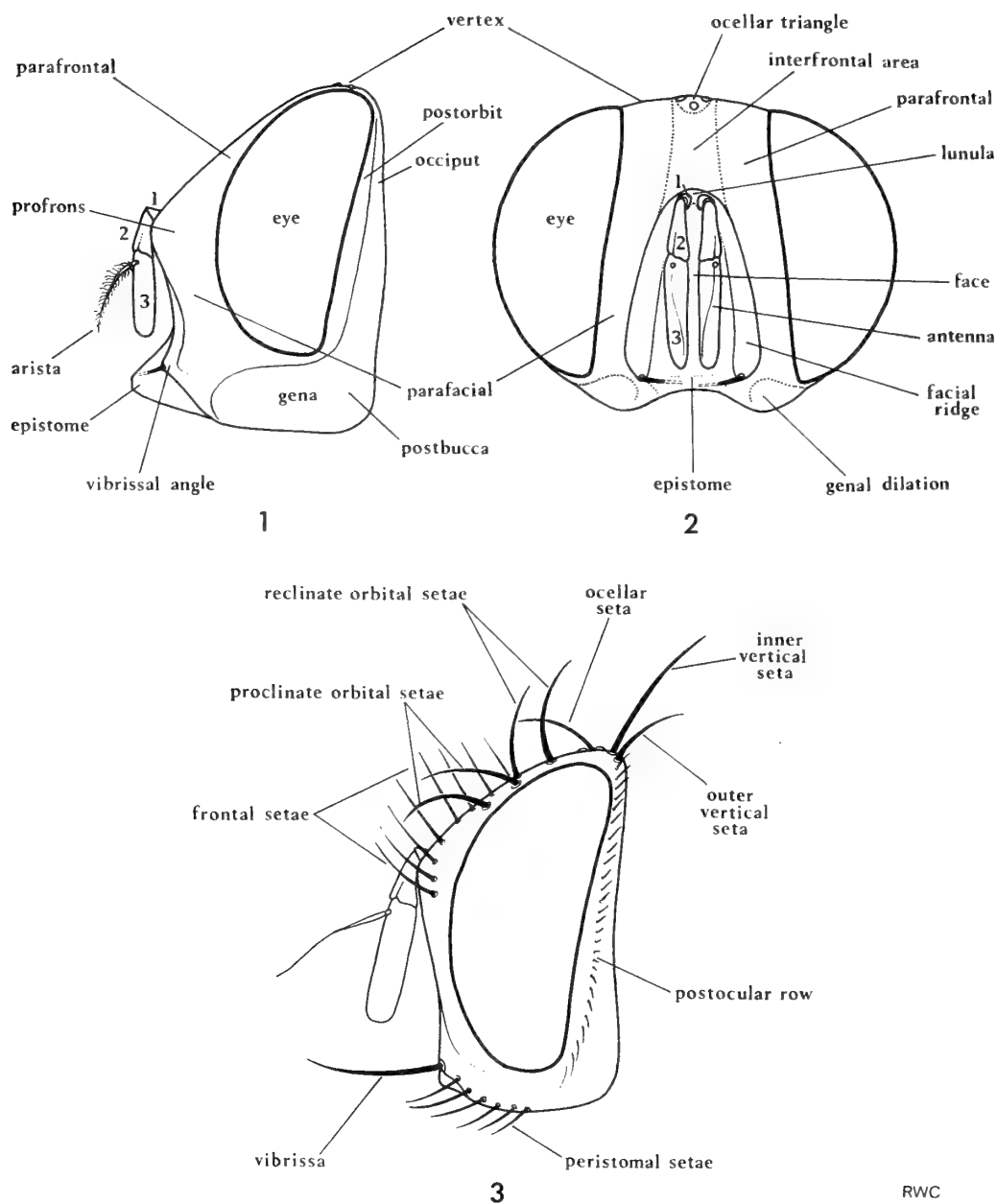
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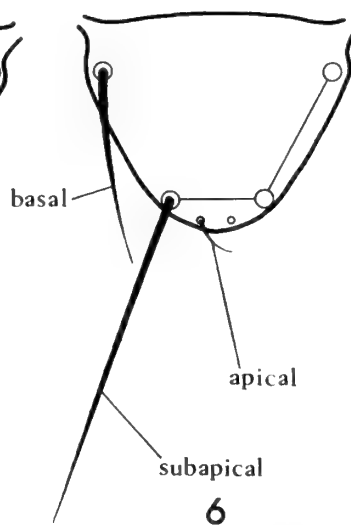
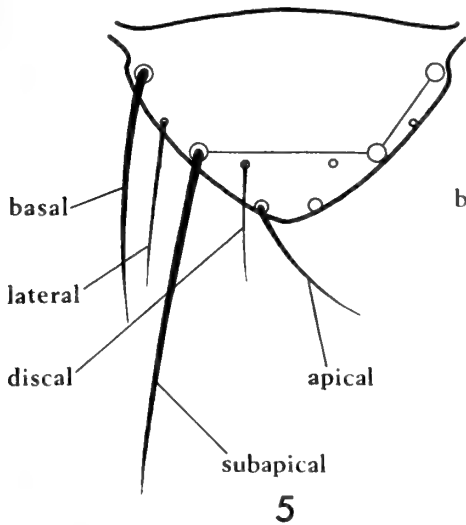
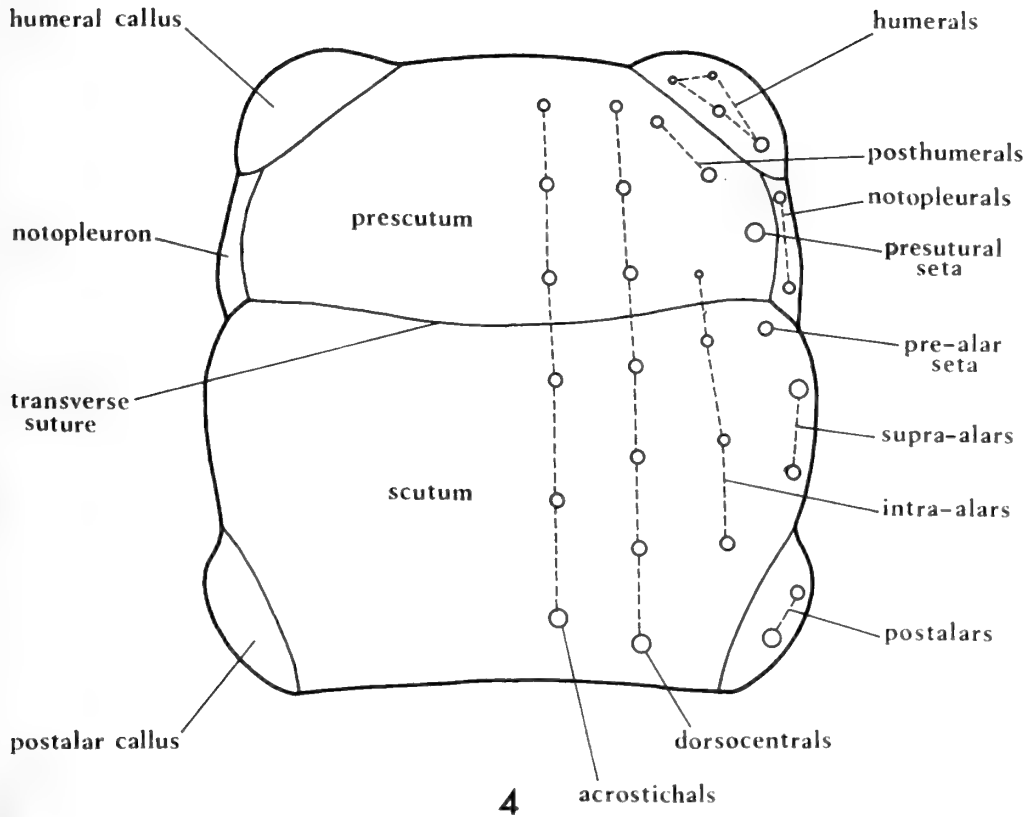
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ILLUSTRATIONS



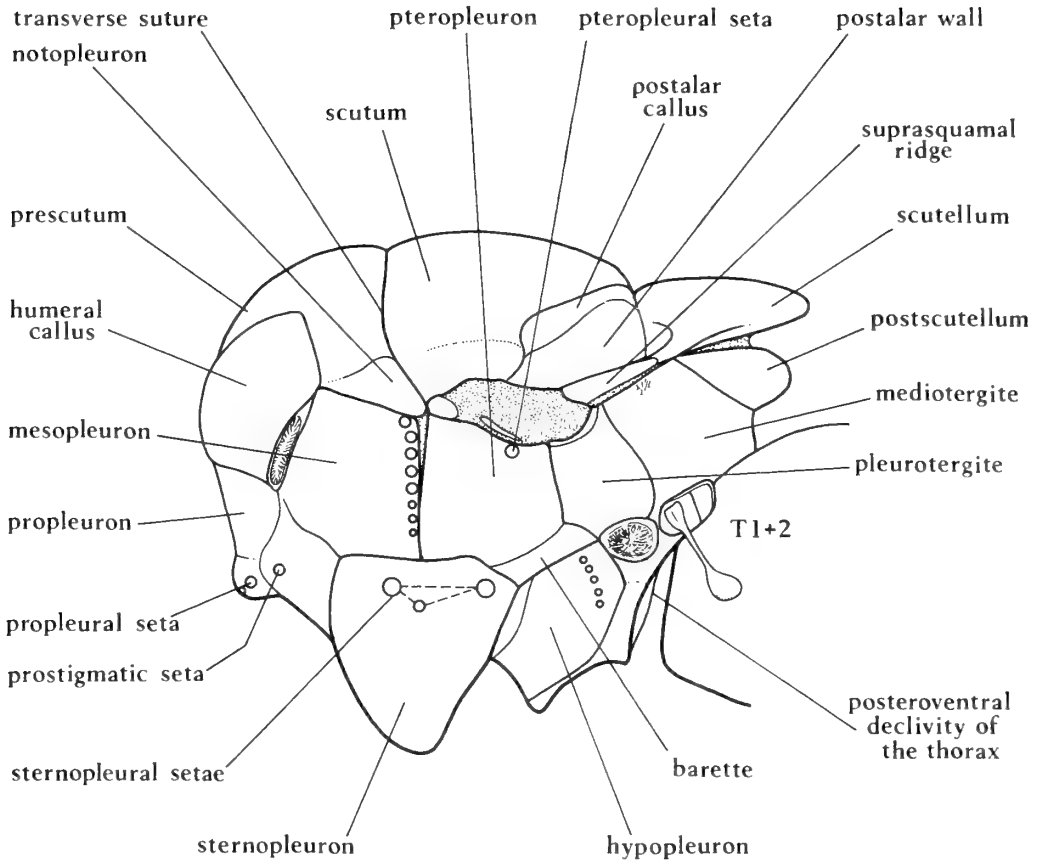
FIGS 1-3. Structure and terminology of the head in typical Tachinidae. 1, left lateral view. 2, facial view. 3, left lateral view showing typical setae. All vestiture omitted in figs 1 and 2 and hairing omitted in fig. 3.

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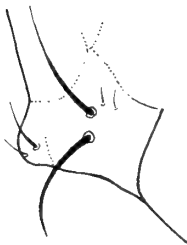


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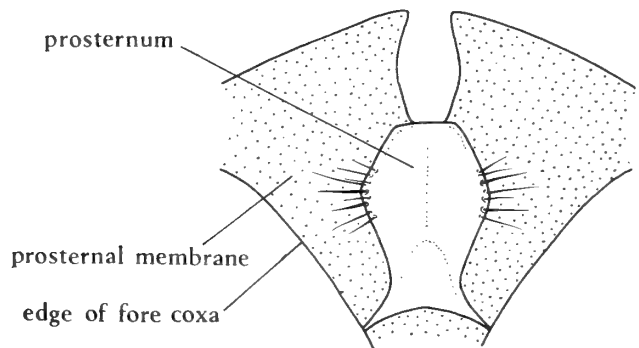
FIGS 4-6. Terminology of thoracic dorsum in Tachinidae. 4, dorsum of thorax, scutellum omitted, with a complete arrangement of chaetotaxy indicated schematically on one side only. 5 & 6, two typical shapes of scutellum and terminology of scutellar bristling; the straight lines connecting basal and subapical setae illustrate important differences in proportion.



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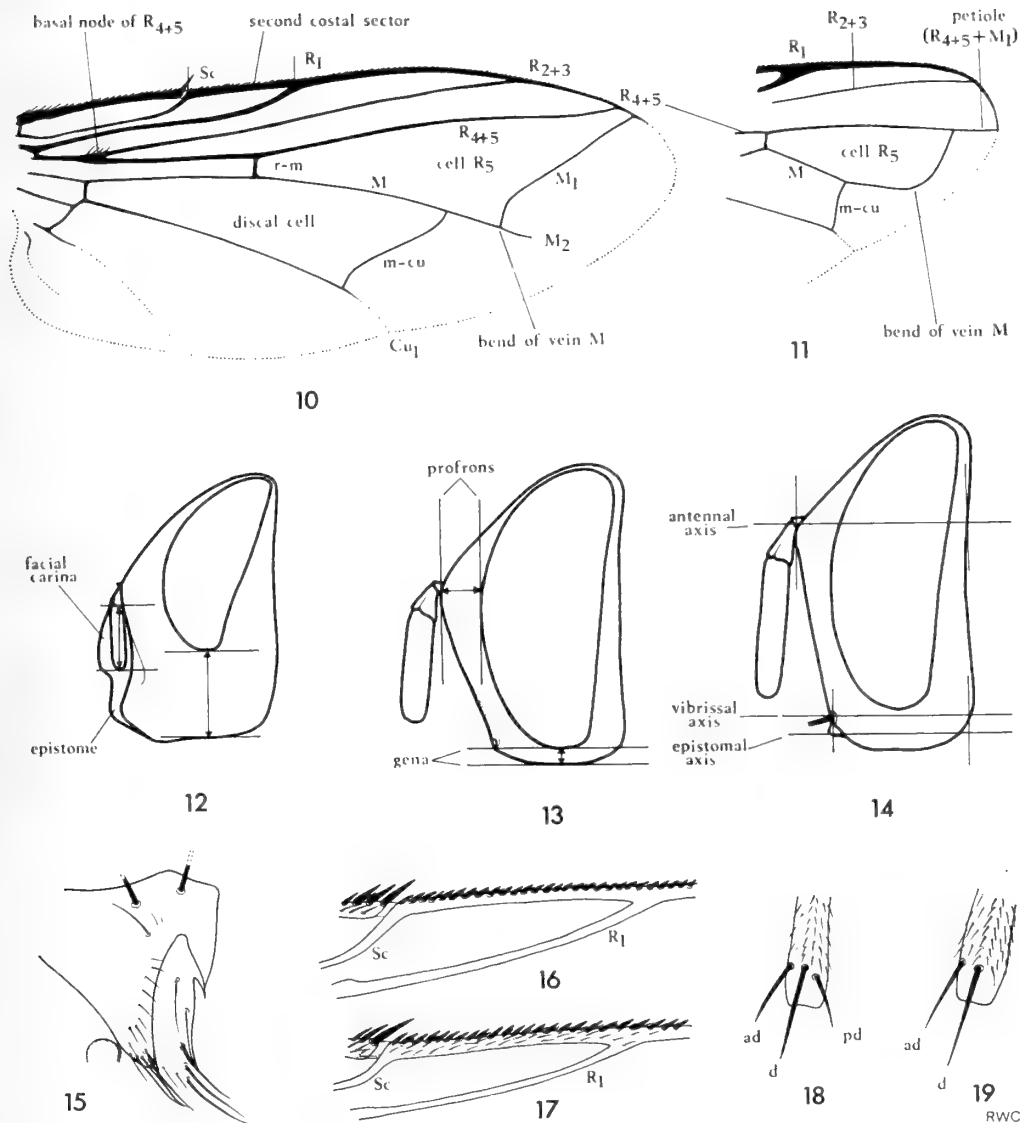
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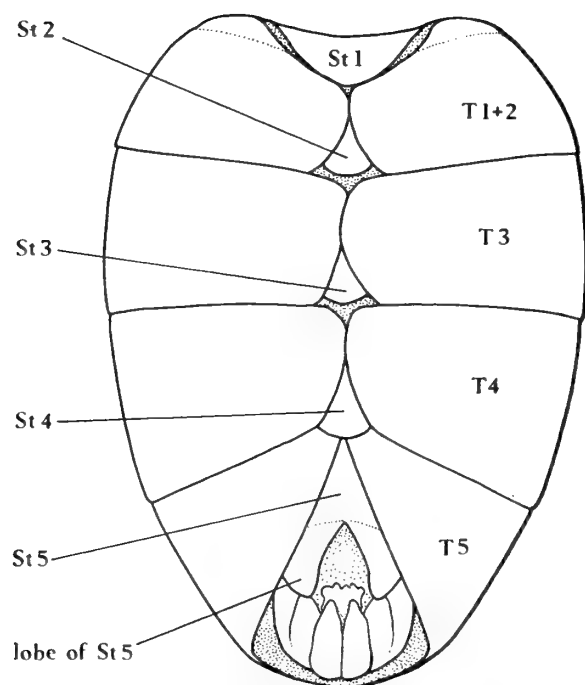
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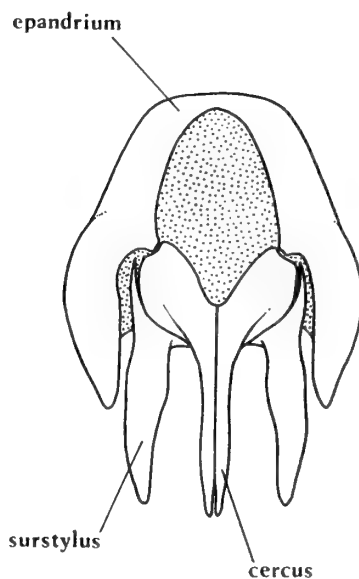
FIGS 7-9. Thoracic characters of Tachinidae. 7, left lateral view of thorax with terminology of sclerites and setae (latter indicated by pore positions only), wing removed. 8, unusual prostigmatic setae in the genus *Peribaea*. 9, prothoracic region, drawn from specimen with setulose prosternum.



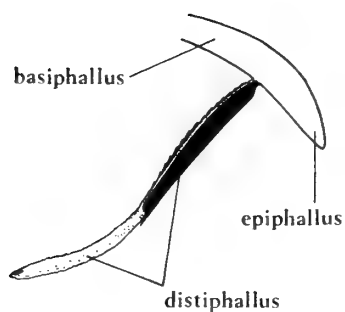
FIGS 10-19. Structural characters of Tachinidae. 10, wing of a species with cell R_5 open and bend of vein M angulate. 11, apical part of wing of a species with cell R_5 closed and bend of vein M rounded. 12, head profile in a typical Prosenine with facial carina. 13, head profile in a typical Carcelline, showing relative widths of gena and profrons. 14, head profile showing important landmark axes. 15, showing precoxal row of hairs on sternopleuron in genus *Actia*. 16 & 17, ventral view of second costal sector in (16) forms with the sector bare, and (17) forms with the sector haired. 18 & 19, dorsal view of apex of hind tibia in typical forms (18) with an *ad* preapical seta, and (19) without such seta.



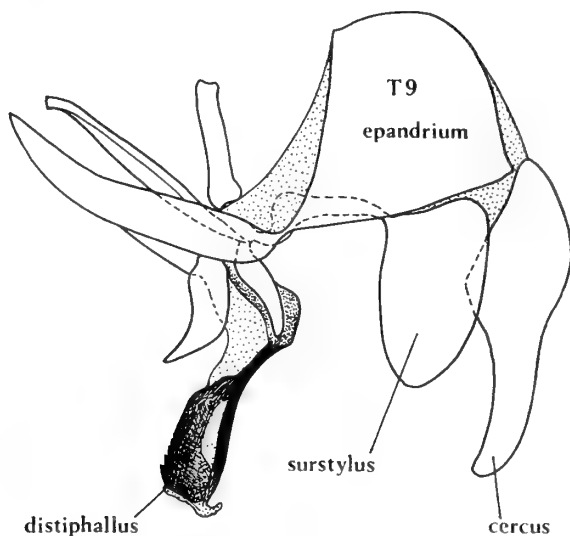
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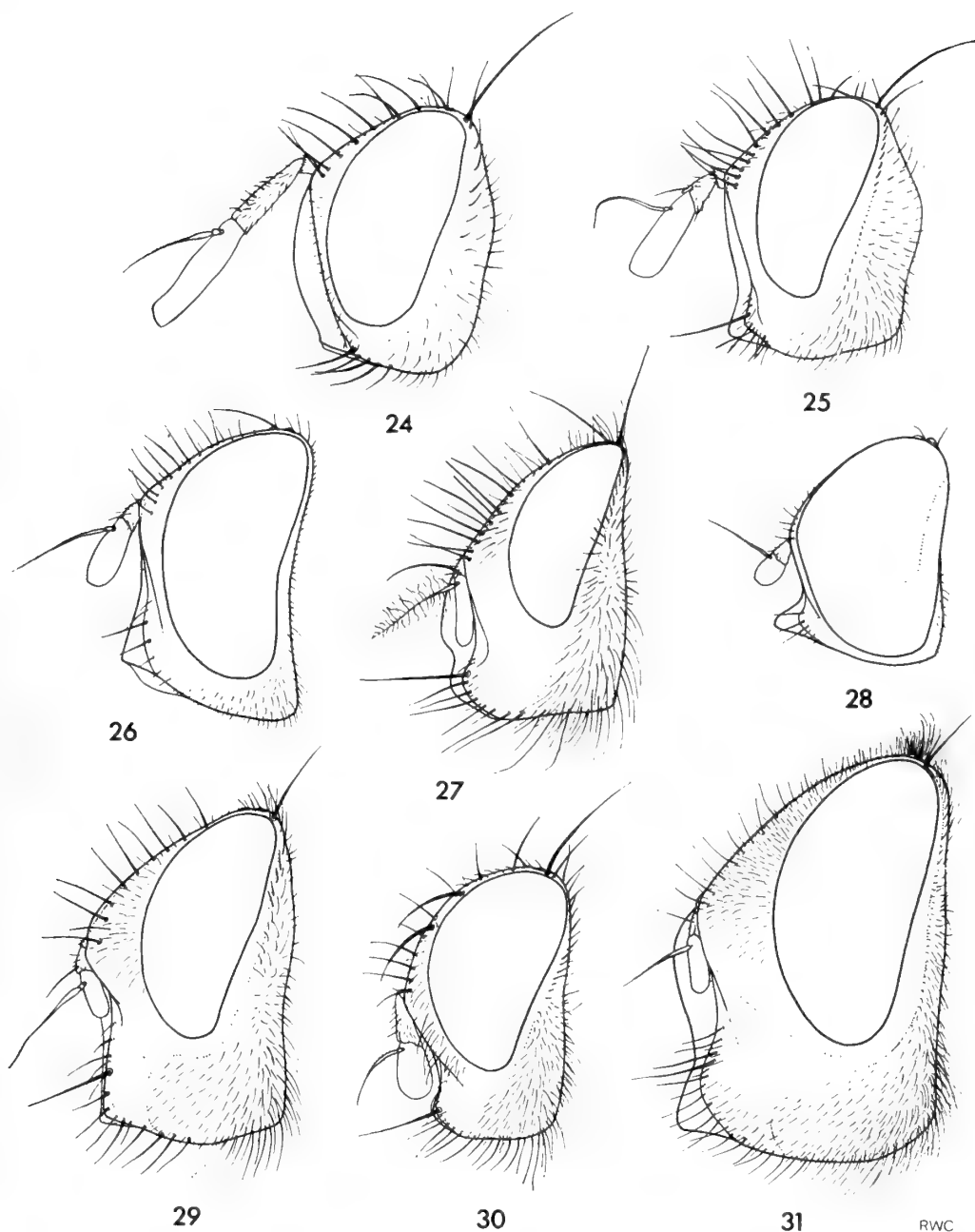
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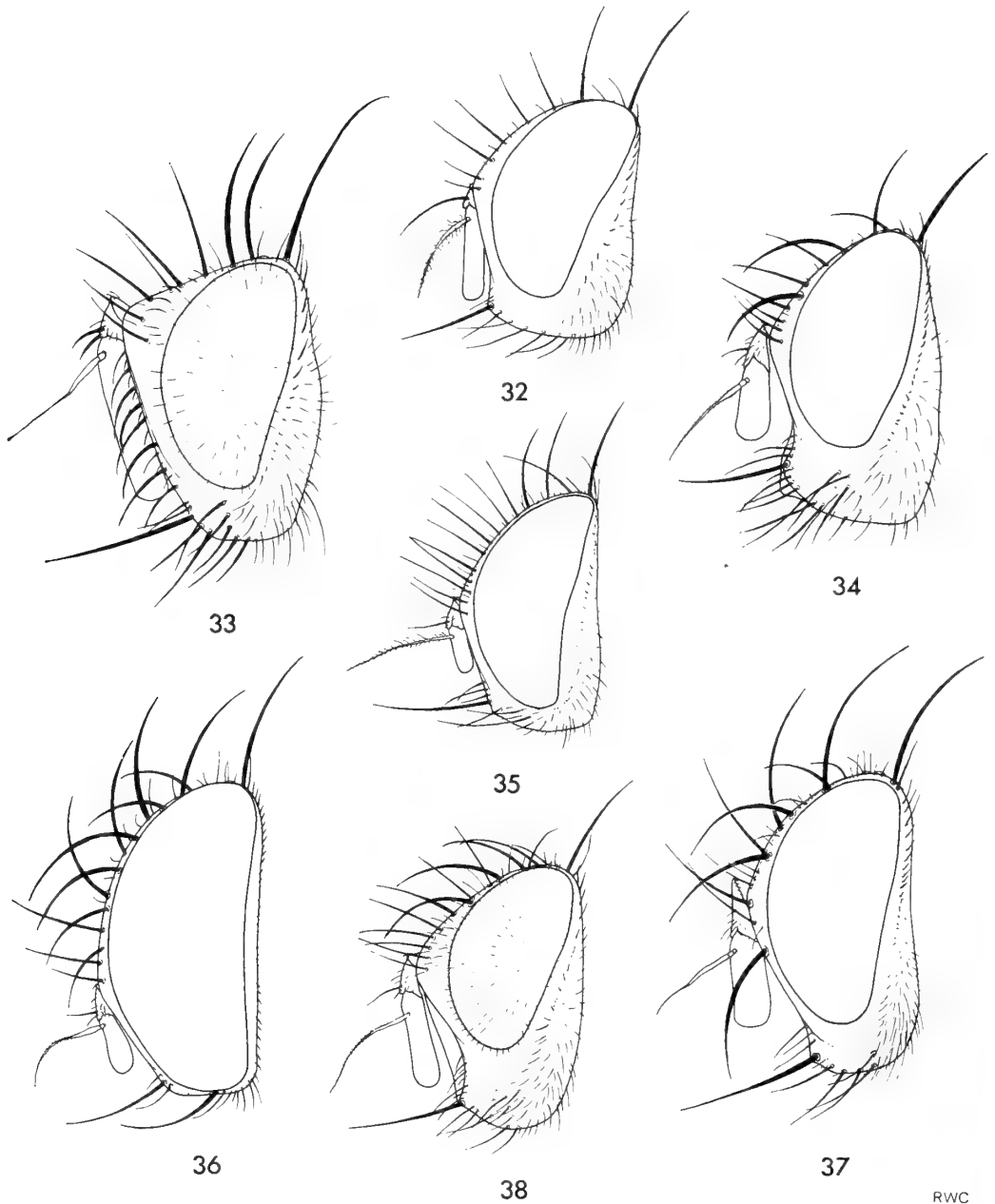
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FIGS 20-23. Abdomen and ♂ genitalia in representative Tachinidae. 20, ventral view of abdomen with numbering of tergites (T) and sternites (St). 21, apical view of a common form of hypopygium, aedeagus and vestiture omitted. 22, 'L-shaped' aedeagus of typical Proseninae. 23, left lateral view of hypopygium in a typical member of the Goniinae, vestiture omitted.



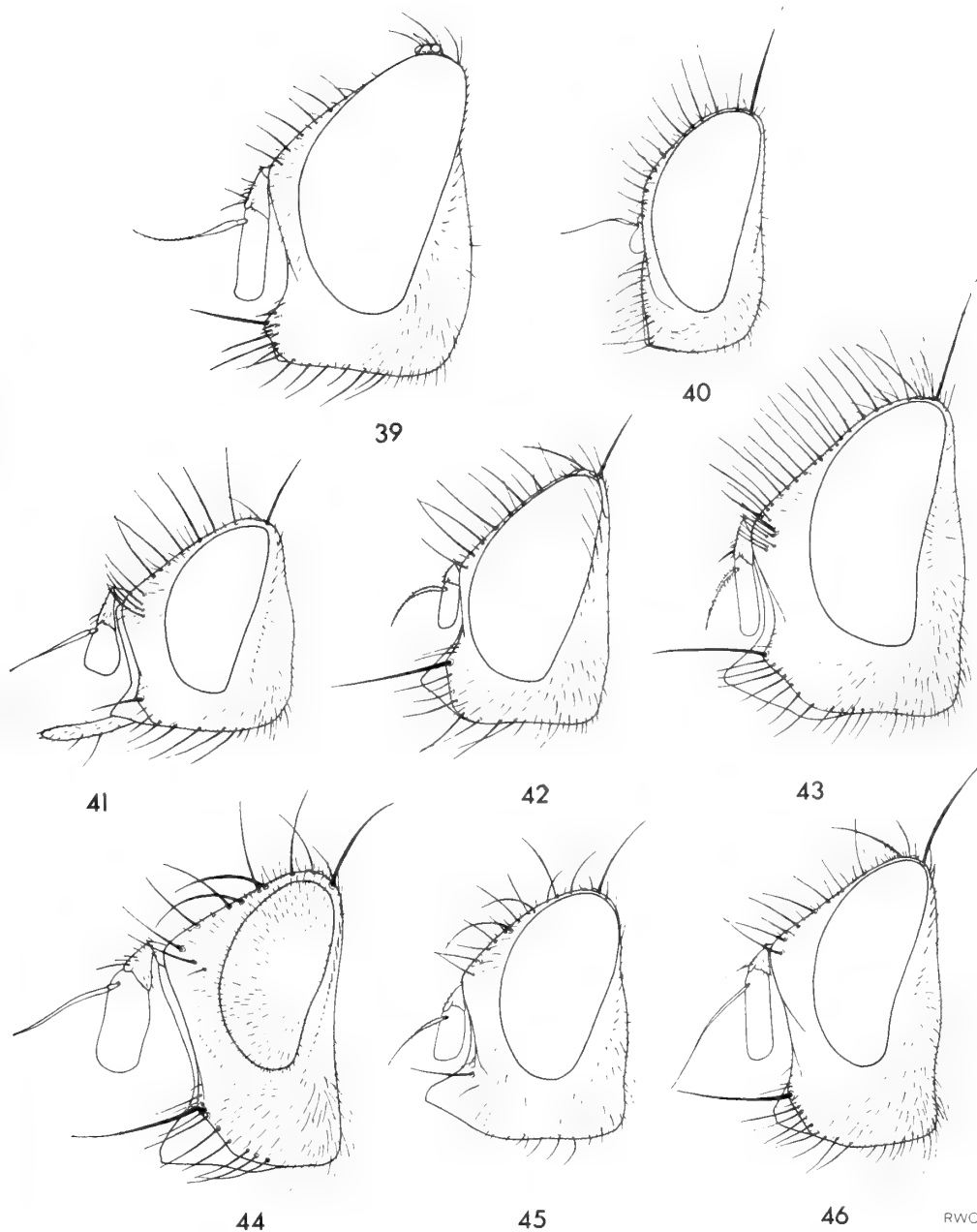
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FIGS 24-31. Head profiles in representative genera of Australian Tachinidae. 24, *Euthera* (♀). 25, *Gerocyptera* (♂). 26, *Saralba* (♂). 27, *Senostoma* (♂). 28, *Alophora* (subg. *Mormonomyia*) (♀). 29, *Ola* (♂). 30, *Platyntainia* (♀). 31, *Rutilia* (subg. *Chrysorutilia*) (♂).



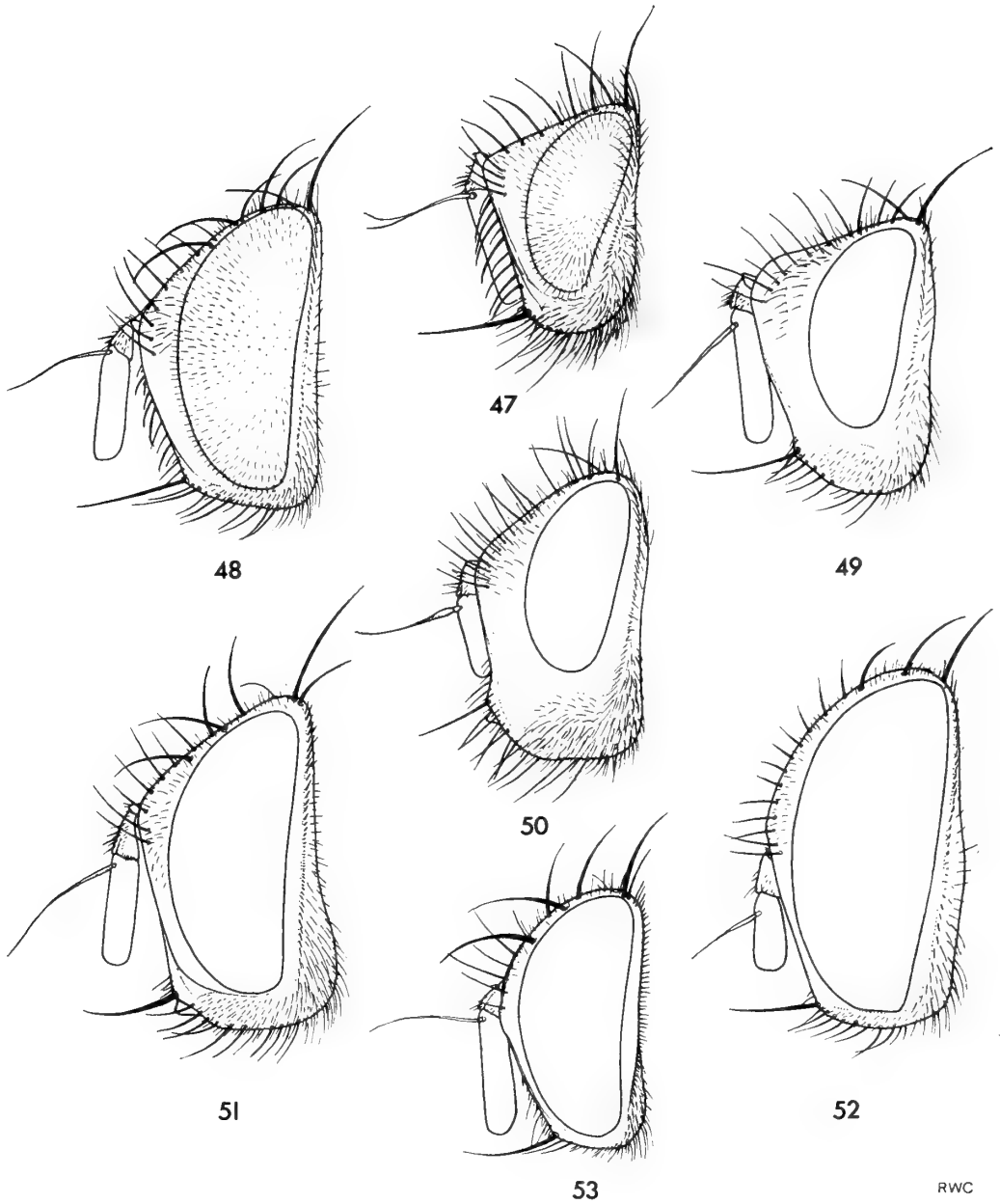
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FIGS 32-38. Head profiles in representative genera of Australian Tachinidae. 32, *Sumpigaster* (♂). 33, *Elpe* (♂). 34, *Doddiana* (♀). 35, *Thelaira* (♂). 36, *Halydaia* (♀). 37, *Voria* (♀). 38, *Nemoraea* (♀).



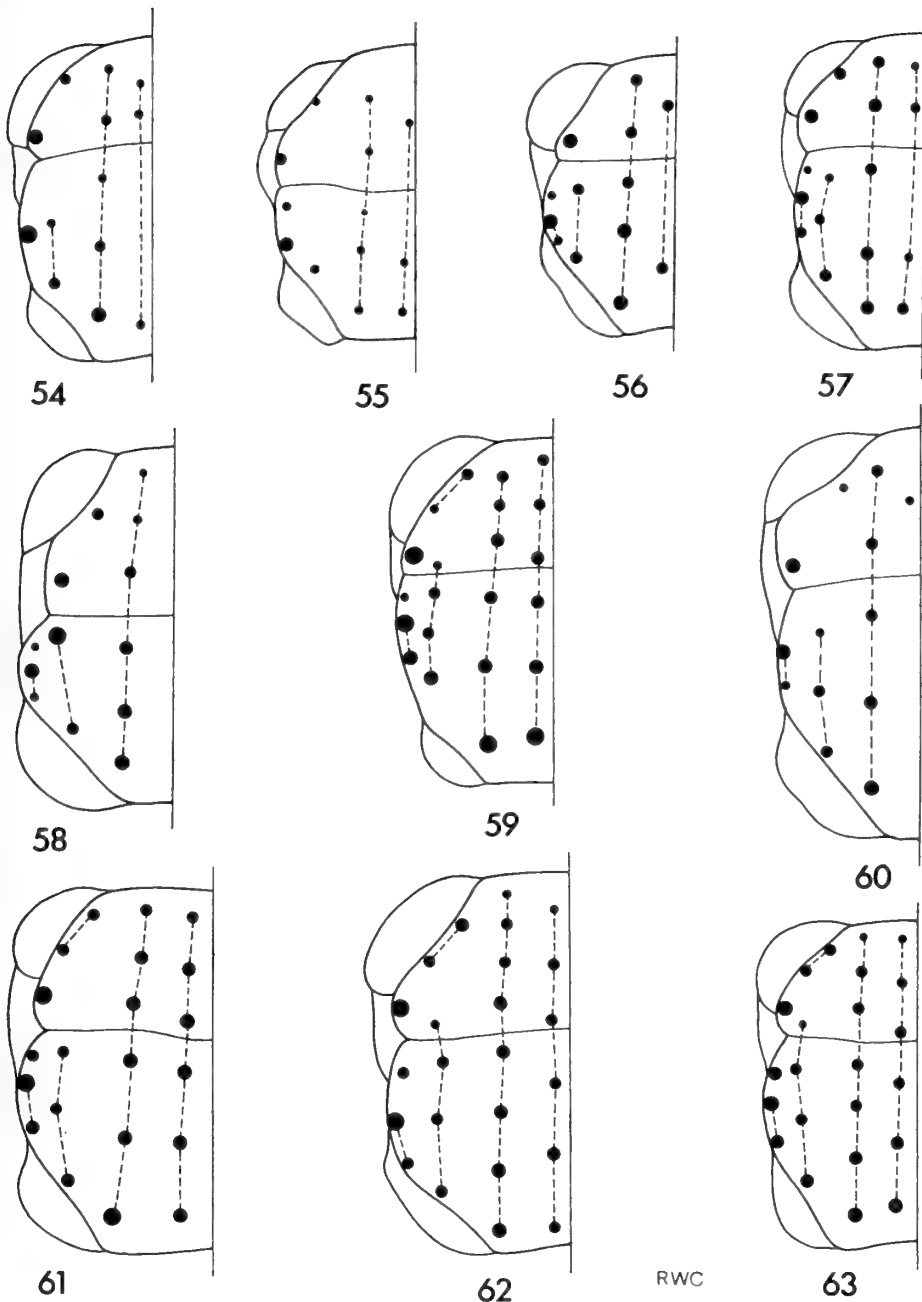
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FIGS 39-46. Head profiles in representative genera of Australian Tachinidae. 39, *Palpostoma* (♂). 40, *Myiotrixa* (♂). 41, *Exechopalpus* (♂), palp shown. 42, *Australotachina* (♂). 43, *Toxocnemis* (♂). 44, *Chaetophthalmus* (♂). 45, *Neximyia* (♀). 46, *Zita* (♂).

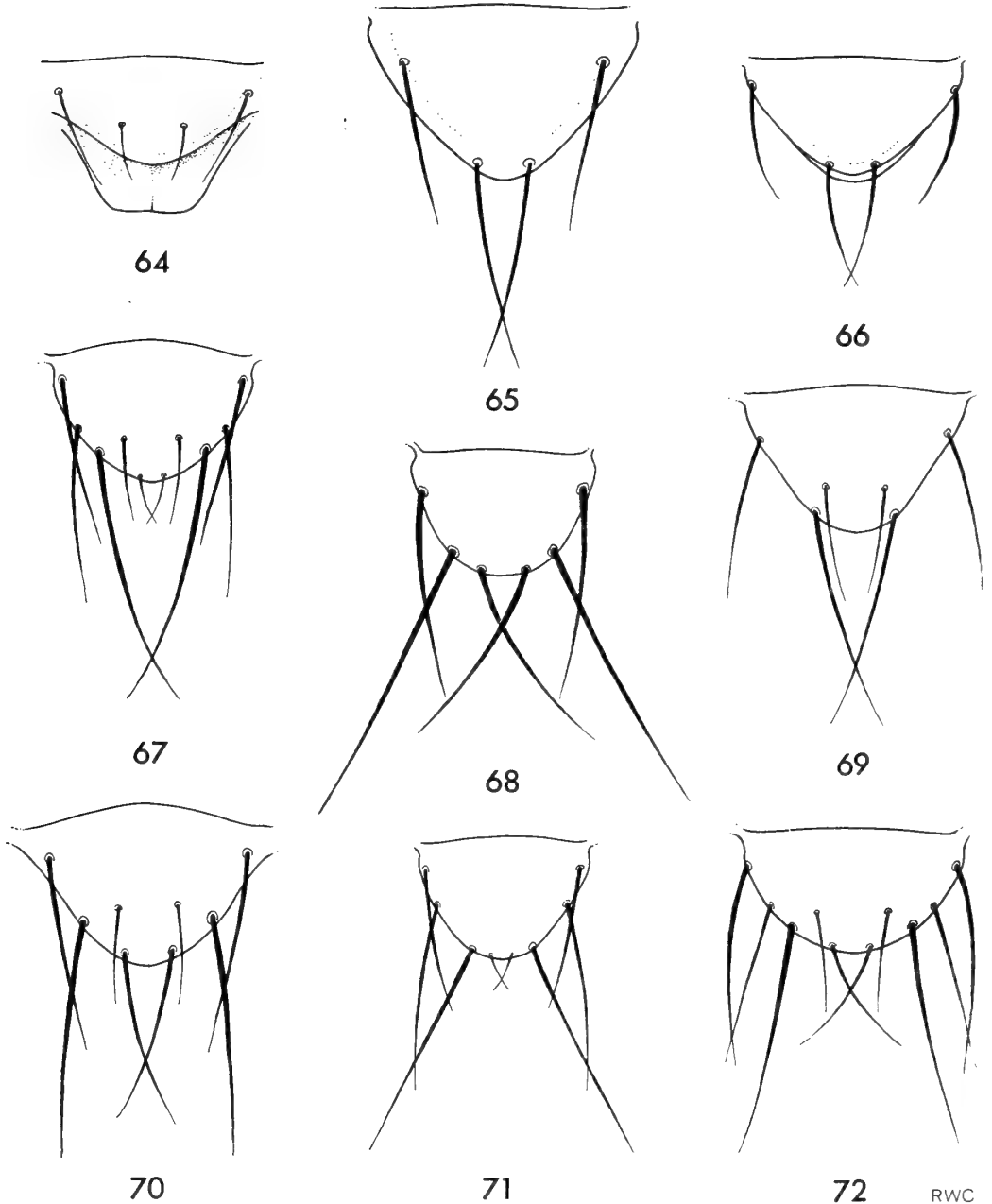


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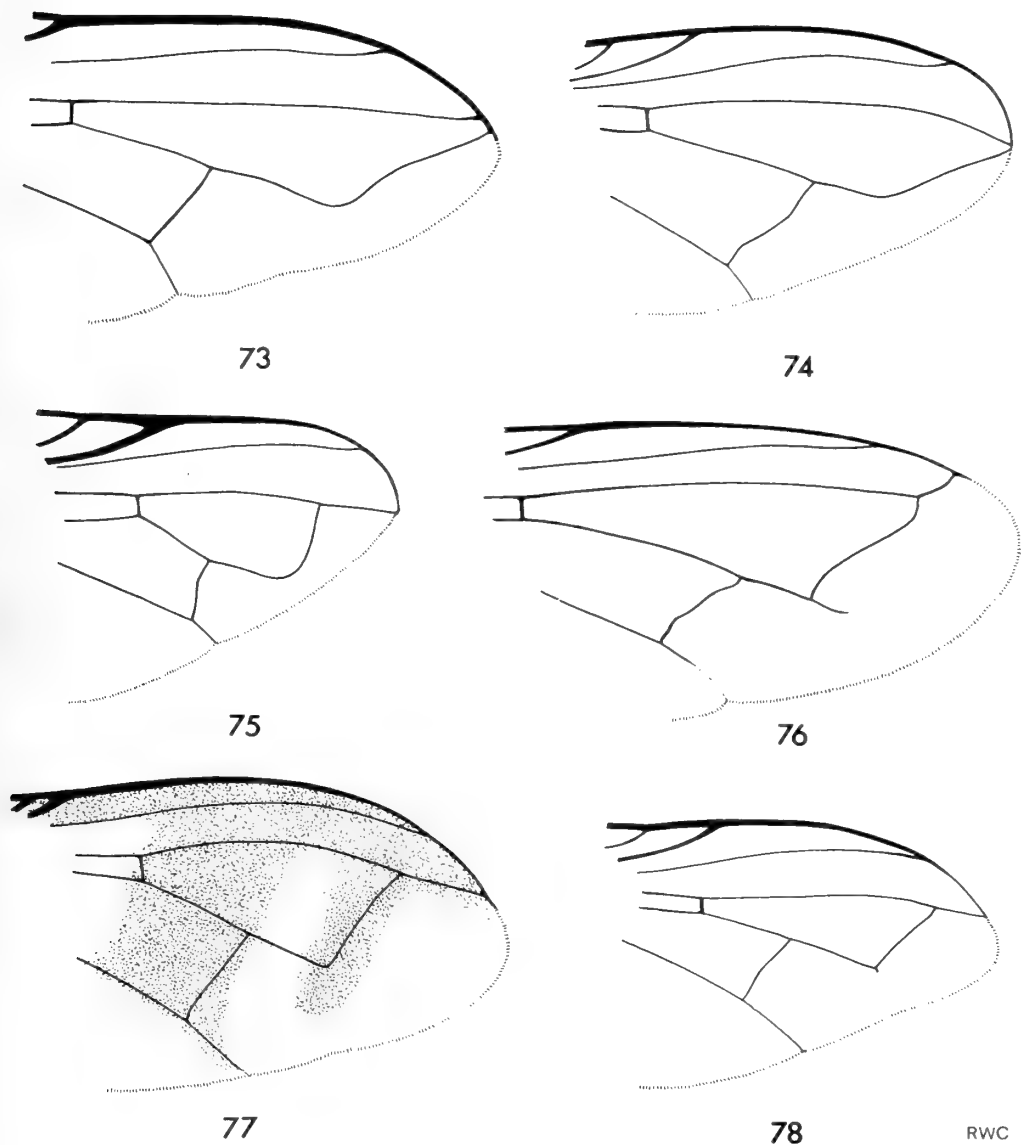
FIGS 47-53. Head profiles of representative genera of Australian Tachinidae. 47, *Austronilea* (♂). 48, *Carcelimyia* (♀). 49, *Zenargomyia* (♂). 50, *Metaphryno* (♂). 51, *Palxorista* (♀). 52, *Koralliomysia* (♂). 53, *Argyrophylax* (♀).



FIGS 54-63. Schematic representations of the main patterns of prescutal and scutal chaetotaxy in Australian Tachinidae. 54, Palpostomatini. 55, Ormiini. 56, Leucostomatini. 57, Glaurocarini. 58, Cylindromyini. 59, Voriini. 60, Minthoini. 61, Linnaemyini. 62, Tachinini. 63, Sturmiini. *Note:* arrangement of setae is not necessarily constant in the tribes indicated, 'pore' sizes shown are exaggerated for clarity, and relative sizes of setae one to another can be gauged approximately from the sizes of the black circles. Figures based on specimens from following genera: 54, *Palpostoma*; 55, *Therobia*; 56, *Leucostoma*; 57, *Doddiana*; 58, *Cylindromyia*; 59, *Hyleorus*; 60, *Sumpigaster*; 61, *Chaetophthalmus*; 62, *Cuphocera*; 63, *Pallexorista*.

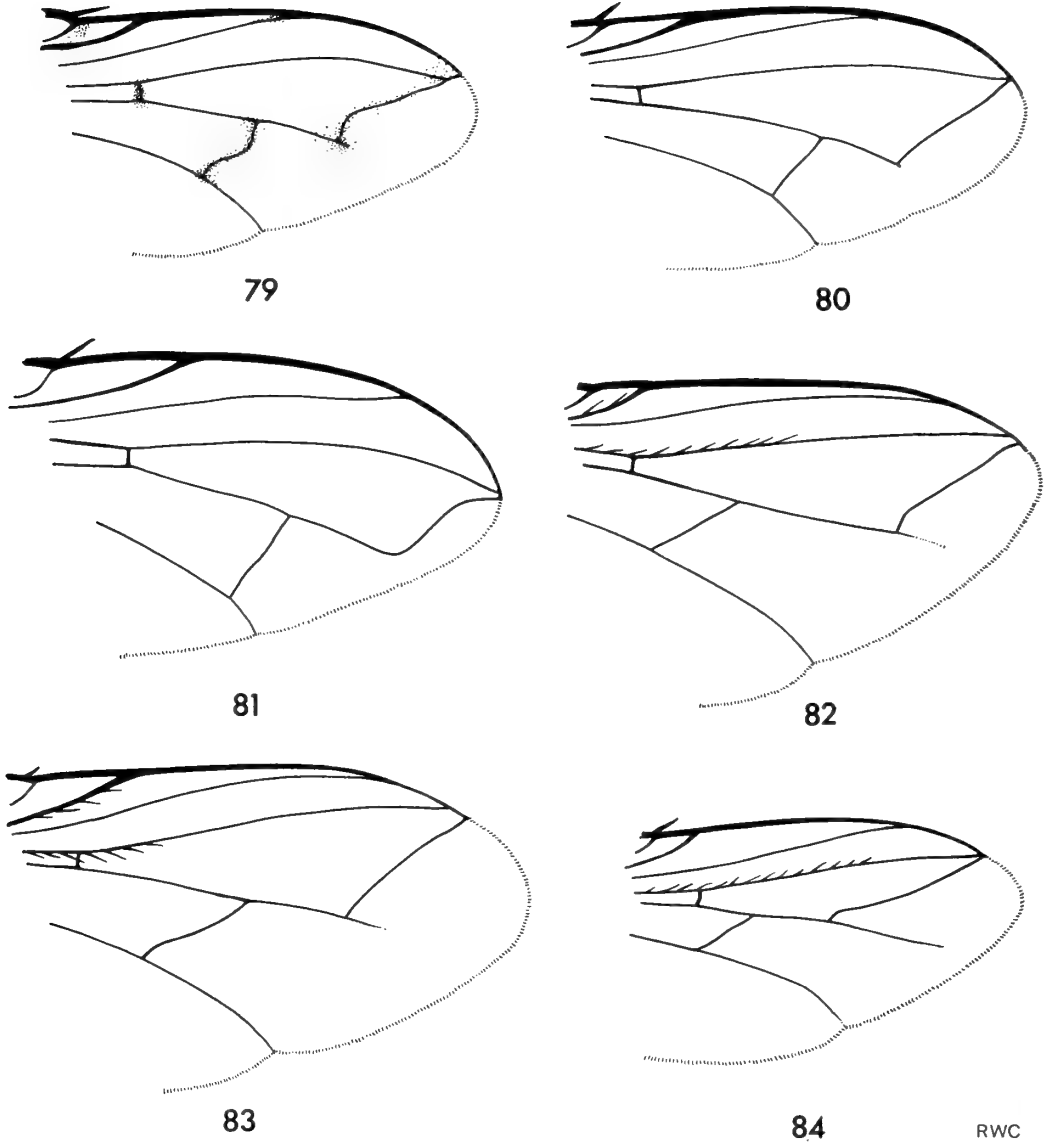


FIGS 64-72. The main arrangements of scutellar setae in Australian Tachinidae. 64, in *Alophora* (*Mormonomyia*) (Phasiini). 65, in Palpostomatini. 66, in *Alophora* (*Hyalomya*) (Phasiini). 67, in Siphonini. 68, in Acemyini. 69, in *Voriella* (Neaerini). 70, in typical Prosenini, drawn from *Senostoma*. 71, in typical Blondeliini, drawn from *Monoleptophaga*. 72, in *Carcelia* and *Winthemia* and some other goniine genera in which subapical setae are unusually widely spaced.

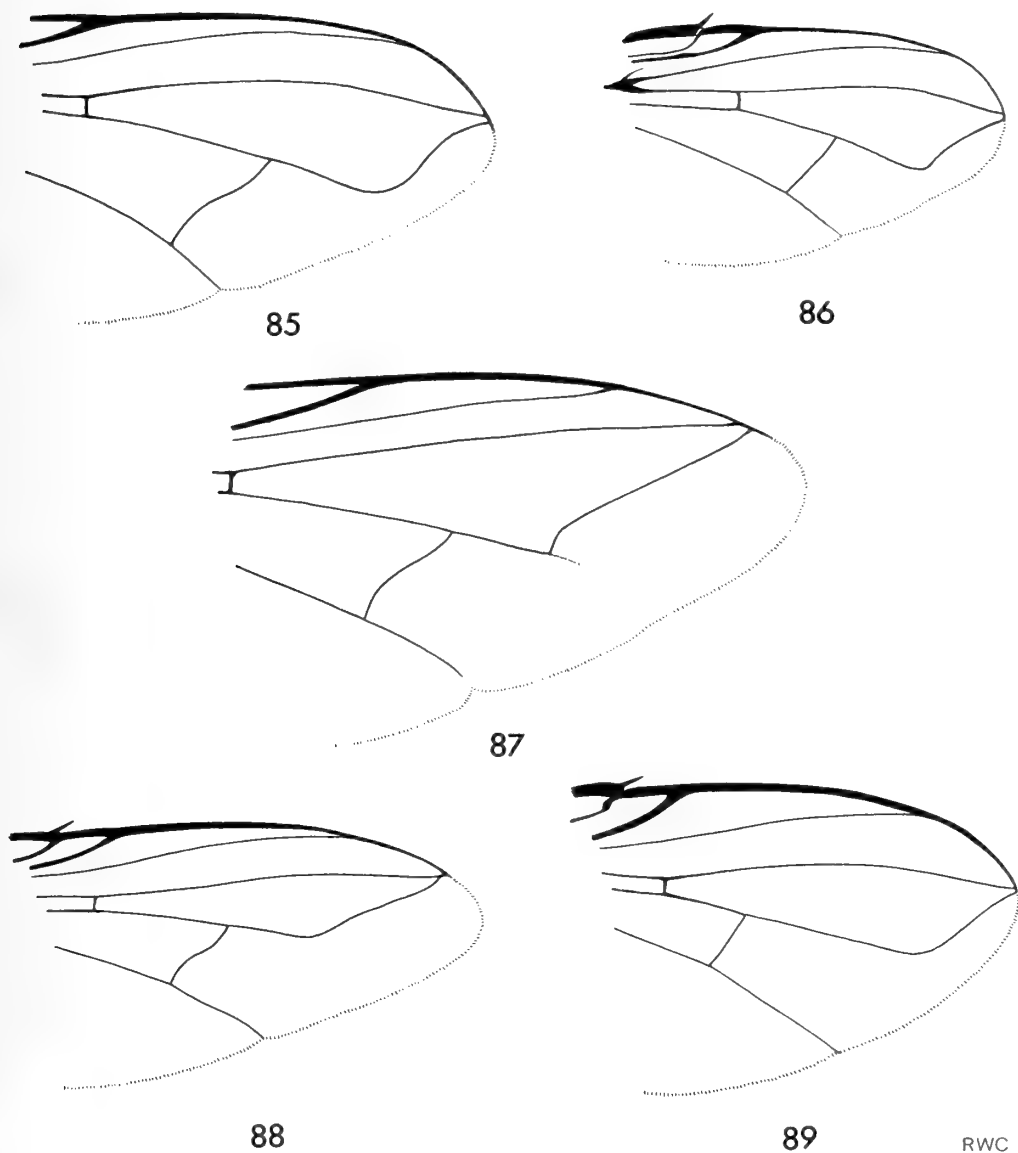


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FIGS 73-78. Wing venation in representative genera and tribes of Australian Tachinidae.
 73, *Myiotrixa* (Myiotrixini). 74, *Pentatomophaga* (Trichopodini). 75, *Allophora* (*Hyalomya*) (Phasiini). 76, *Cylindromyia* (Cylindromyiini). 77, *Euthera* (Eutherini).
 78, *Leucostoma* (Leucostomatini).

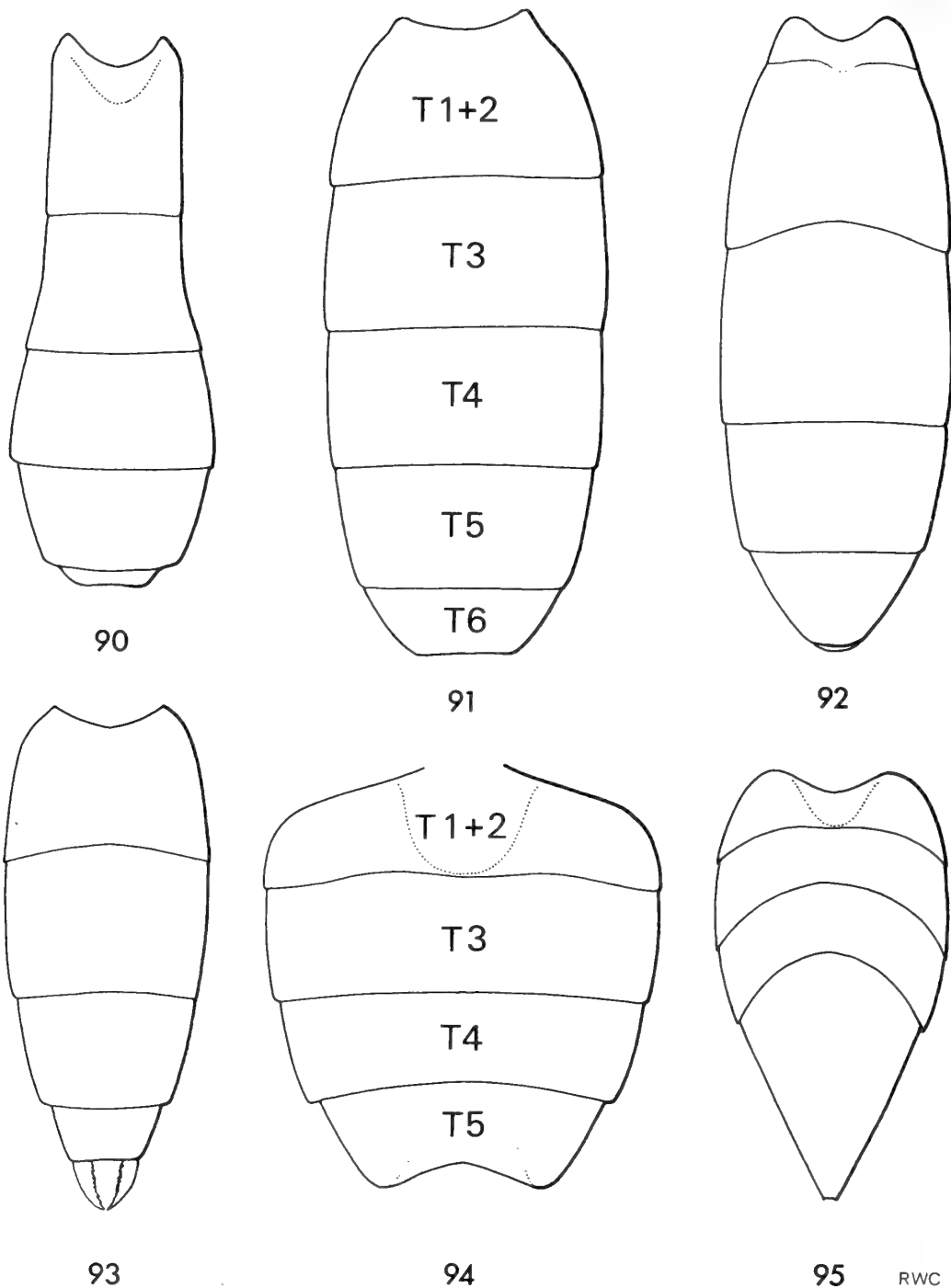


FIGS 79-84. Wing venation in representative genera and tribes of Australian Tachinidae. 79, *Prosenina* (Prosenini). 80, *Prosenia* (Prosenini). 81, *Doddiana* (Glaurocarini). 82, *Hystricovoria* (Voriini). 83, *Voria* (Voriini). 84, *Hyleorus* (Voriini).



FIGS 85-89. Wing venation in representative genera and tribes of Australian Tachinidae. 85, *Trigonospila* (Blondeliini). 86, *Voriella* (Neaerini). 87, *Exorista* (Exoristini). 88, *Ceracia* (Acemyini). 89, *Ceromya* (Siphonini).

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FIGS 90–95. Abdominal shape in some Australian Tachinidae (vestiture omitted). 90, *Saralba* (Trichopodini). 91, *Pentatomophaga* (Trichopodini). 92, *Cylindromyia* (Cylindromyiini). 93, *Leucostoma*, ♀ showing forcipate apex to abdomen. 94, species of *Rutilia* with excavate T5. 95, *Teretrophora*, ♀ showing exceptionally elongate conical T5.

Two pertinent items of nomenclatural information became known while this paper was at the page-proof stage. These concern the generic name *Spoggosia* and the nominal species *Masicera viridiventris*.

(1) *Spoggosia* Rondani. In the present paper this name has been used as valid for a genus of Exoristini in accordance with the work of Mesnil (1947, 1956, 1960), but Herting (1972)* has now discovered that the name *Chetogena* Rondani, 1856, applies to this genus and should be used as its valid name, since it has priority over *Spoggosia* Rondani, 1859. The genus *Chetogena* Rondani is widespread in Eurasia and Africa, and has one described and at least one undescribed species in Australia. The combination *Chetogena micropalpis* (Malloch, 1930) **comb. n.** is here established for the described Australian species. It should be noted that Herting (1972 : 8) spelt the name as *Chaetogena* but that the original spelling *Chetogena* is correct under the *Code*.

(2) *Masicera viridiventris*. Macquart (1847 : 84 & 1851 : 163) described two nominal species under this name, the later (1851) use of the name being a junior primary homonym of the earlier (1847) use. The earlier nominal species was described from Tasmania and the later one from Egypt. Townsend (1916c) cited the two *viridiventris* names as synonyms and stated that the cited provenance 'Égypte' for the later use was in error. During earlier work on Macquart's types (Crosskey, 1971 : 276) I was unable to find the type of *viridiventris* (2), purportedly from Egypt, and rejected Townsend's synonymy of the two *viridiventris* as unproven, but it can now be confirmed that Townsend was right. On a visit to Oxford University Museum in April, 1973, the female holotype of *M. viridiventris* Macquart, 1851, was found amongst the Palaearctic Tachinidae from Bigot's collection, and examination showed at once that the specimen is undoubtedly conspecific with, and the female of, *M. viridiventris* Macquart, 1847 (described from the male); the two types have been directly compared. The cited provenance of Egypt for *viridiventris* (2) is unquestionably in error, and the second use of *viridiventris* should appear as follows in the synonymy of *Tasmaniomyia viridiventris* (Macquart, 1847) on page 152 of this work:

viridiventris Macquart, 1851 : 163 (190) (*Masicera*). Holotype ♀, AUSTRALIA, prob. TASMANIA [publ. 'Égypte' in error] (UM, Oxford) [examined]. (Name a junior primary homonym of *M. viridiventris* Macquart, 1847, no replacement name required.)

The holotype of *viridiventris* (1851) is in fair condition, but has lost the right mid leg and the apices of some tarsi, the thoracic dorsum is rather crushed and the ptilinum partially extruded. It bears Macquart's original label reading 'Masicera viridiventris ♀. Macq. n. sp.' and Bigot's collection label reading 'M Viridiventris. ♂. Egypt. Macq.' (the sex sign being erroneous). At the time of writing the holotype is still in the collection of the University Museum, Oxford, but it is hoped that consent will be obtained for it to be transferred to the British Museum (Natural

* HERTING, B. 1972. Die Typenexemplare der von Meigen (1824-1838) beschriebenen Raupenfliegen (Dipt. Tachinidae). *Stuttg. Beitr. Naturk.*, No. 243, 15 pp.

History), where all other types of Tachinidae from Bigot's extra-Palaeartic material are housed. (It is germane to note here that on p. 294 of my 1971 paper I mistakenly implied that *all* the Tachinidae from Bigot's collection are in the BMNH. This is not so: all the extra-Palaeartic Tachinidae are in the BMNH, but the Palaeartic material, which includes some Macquart types as well as several Bigot types of Palaeartic nominal species, is in Oxford.)

INDEX TO FAMILY-GROUP NAMES

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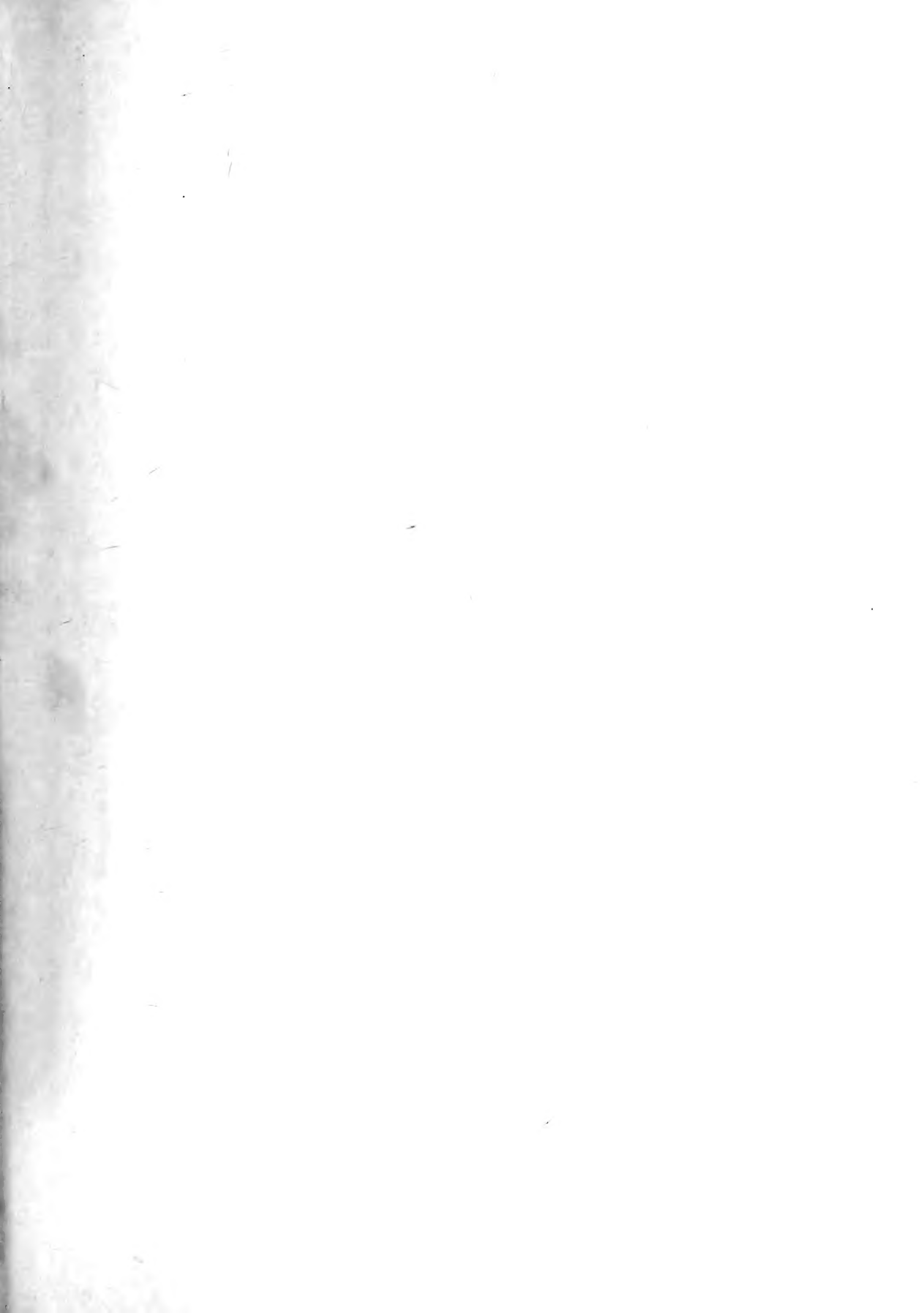
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